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—

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Index to Vol. XVII.

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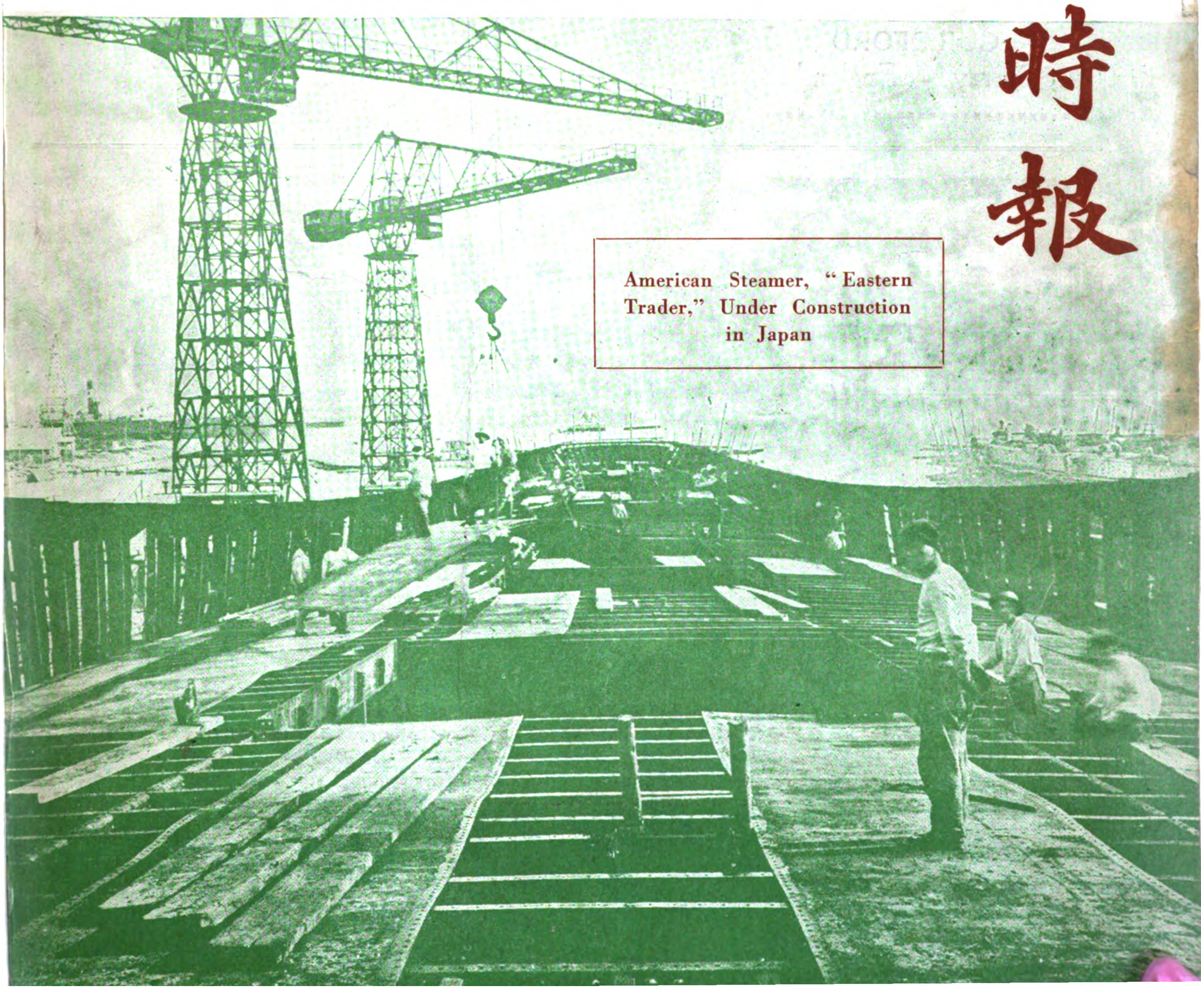

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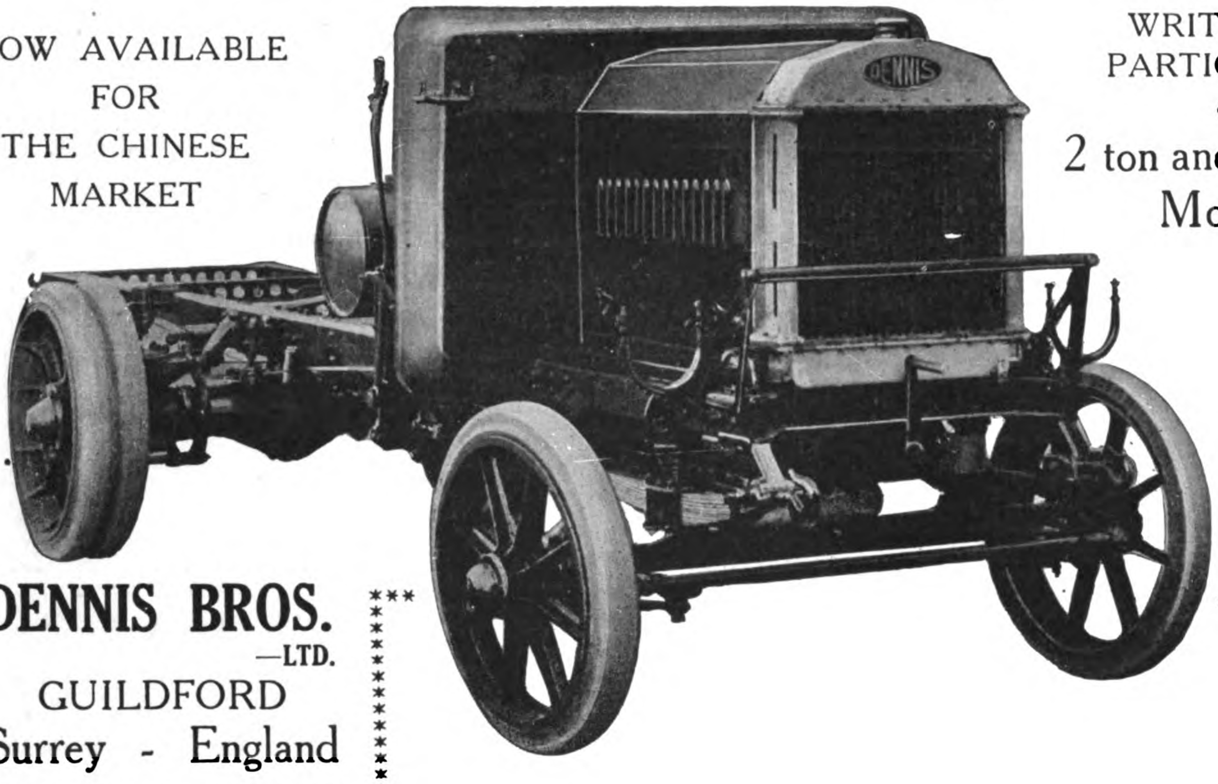

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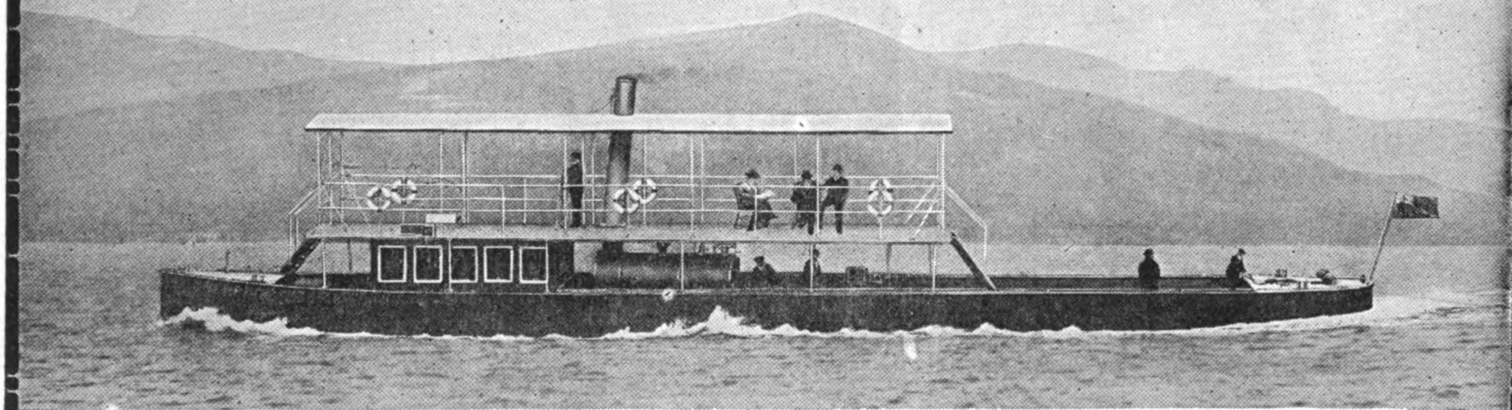

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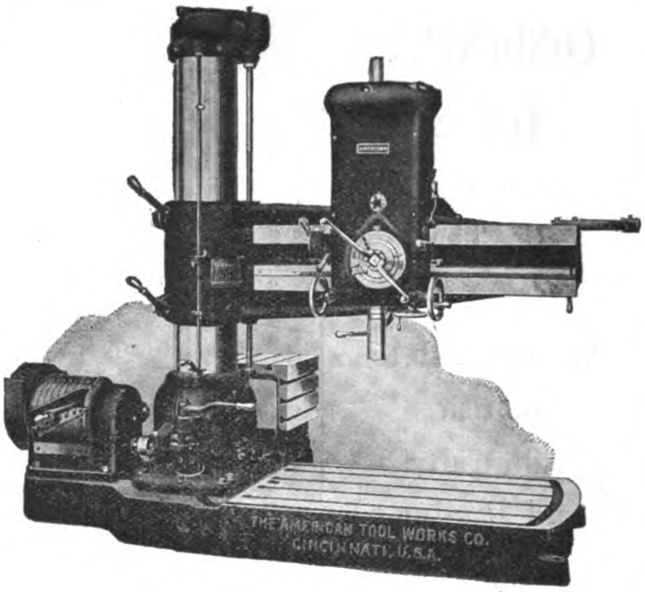

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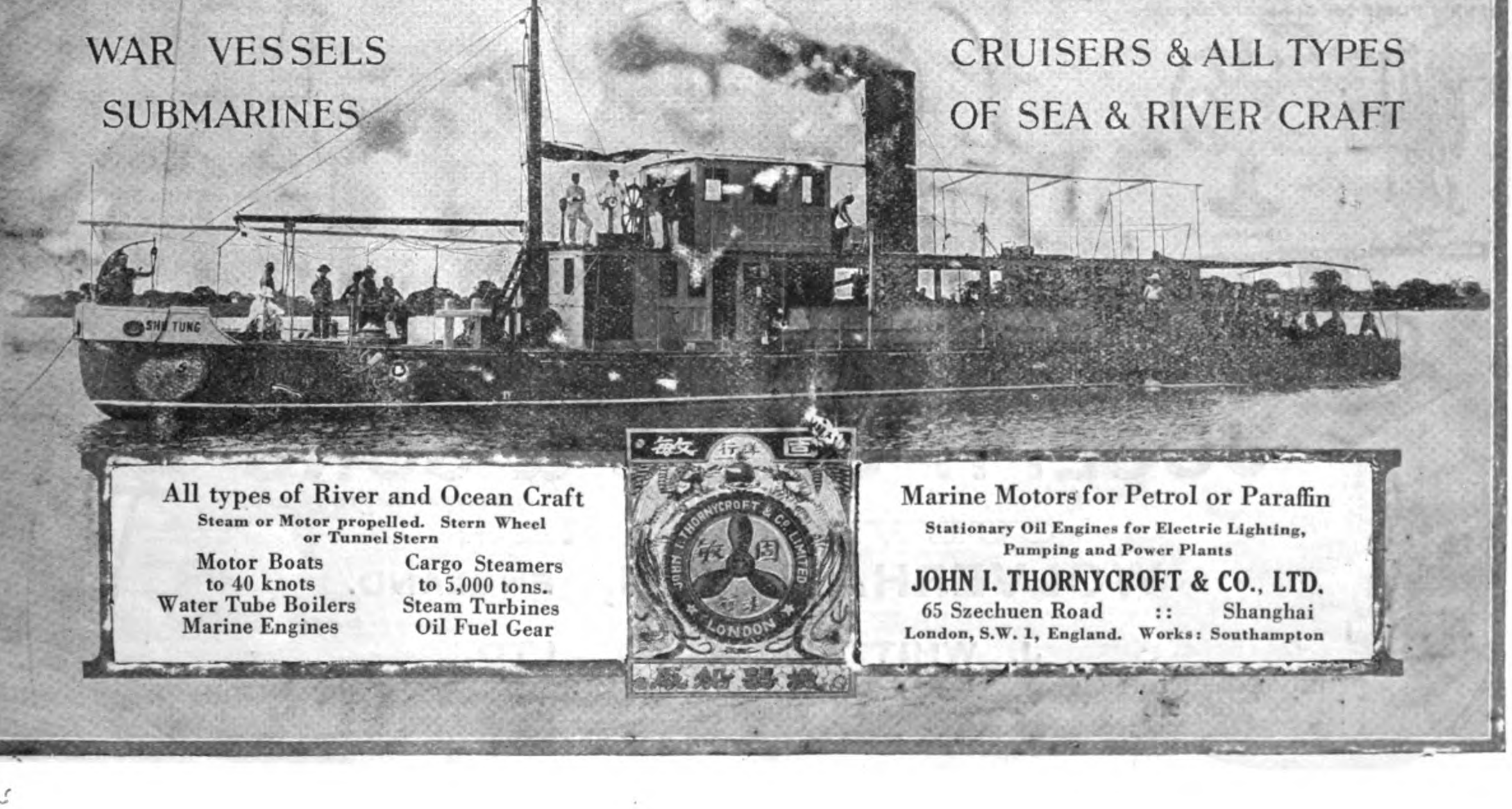

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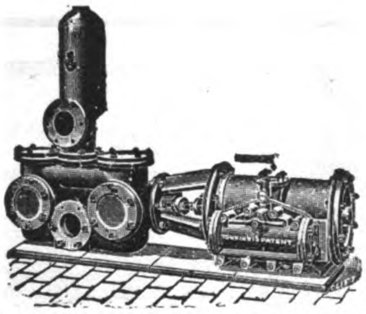

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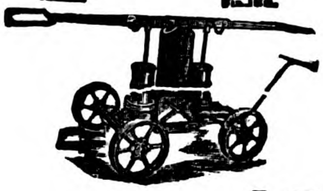

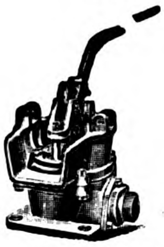

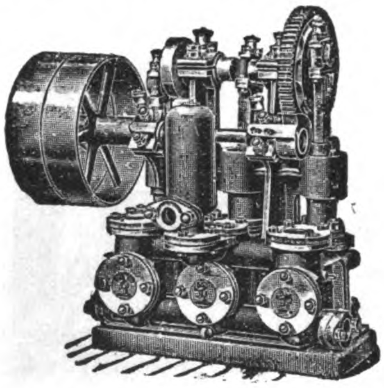

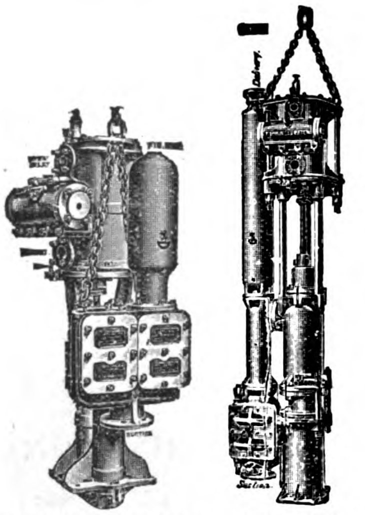

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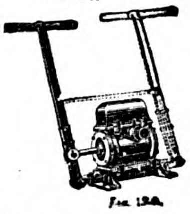

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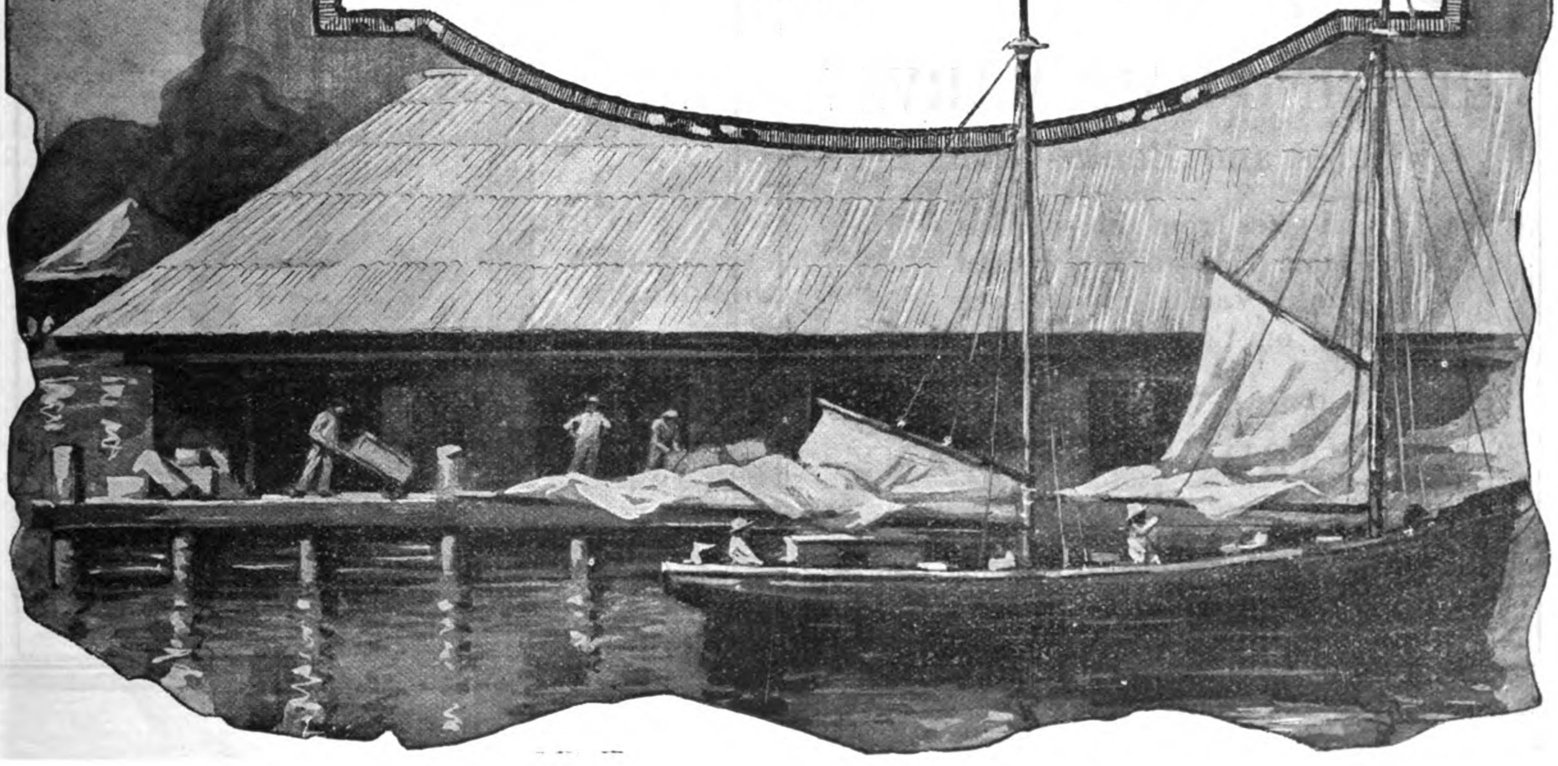

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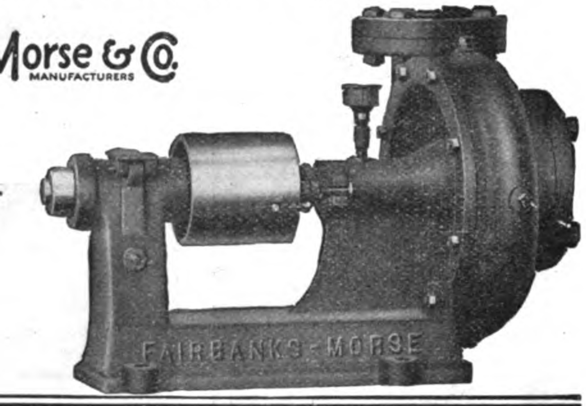

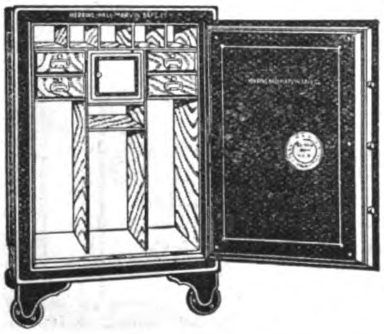

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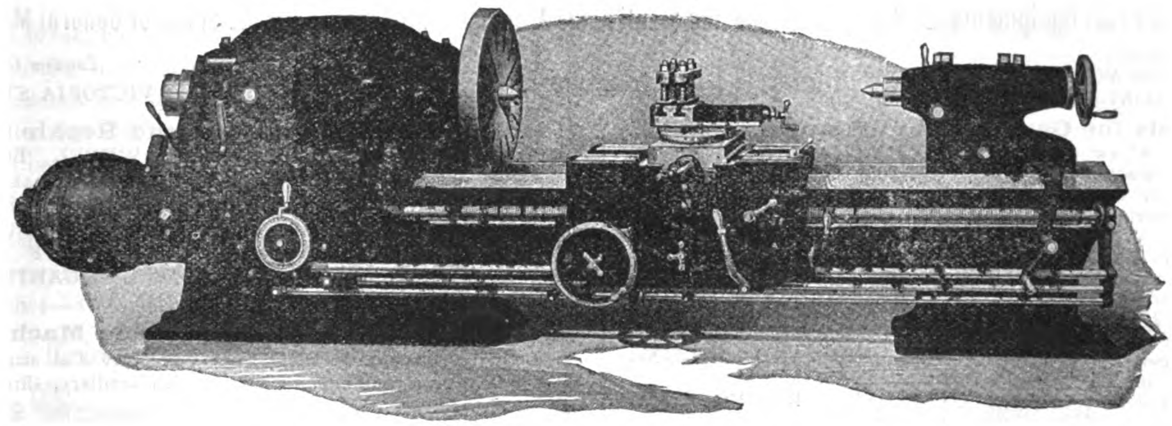

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DRILLING MACHINES: 24" to 60" RADIAL: 4', 5', 6', semi and full universal: also heavy duty type up to 10' MULTIPLE SPINDLE: 2, 4 and 6 spindles; in variety of types.
MILLING MACHINES: Built in variety of types and sizes to suit customers' requirements.
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HORIZONTAL BORING AND DRILLING MACHINES.
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STRAIGHTENING ROLLS.
PLATE PLANERS.
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GARBOARD BENDING MACHINES.
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CRANK SHAFT LATHES.
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Engine Lathes, 14" to 16" Swing: Turret Lathes; 10" Toolmakers' Lathe; Milling Machines, Hand and Automatic; Cylindrical and Surface Grinding Machines: Single and Multiple Spindle Drilling Machines; Die Sinking Machines, etc.

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LATHES, Driving Wheel: 51" to 90" swing.
LATHES, Car Wheel.
LATHES, Axle.
WHEEL PRESSES: Capacities, 200 to 600 tons and to take wheels from 42" to 90"
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Including machine tools for the manufacture of all sizes of naval and coast defense guns, gun mounts, turrets, field artillery, shrapnel and high explosive shells.

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LATHES—Engine, equipped with attachments for various operations on projectiles and guns.
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Supplied with steel frames that do not break, nut guards that keep the adjusting nut from being turned accidently in close quarters, and inserted jaws in end of handle that can be removed when worn, saving the handle.

There are other superior points that every user of Trimo Pipe Wrenches knows—all for economy to the user.

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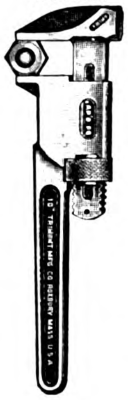
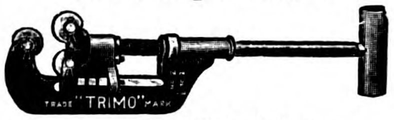


Trimo Pipe Cutter



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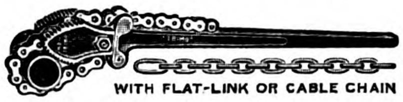

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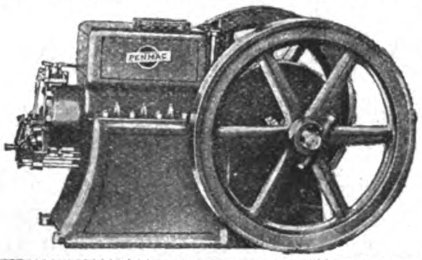

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Also Manufacturers of
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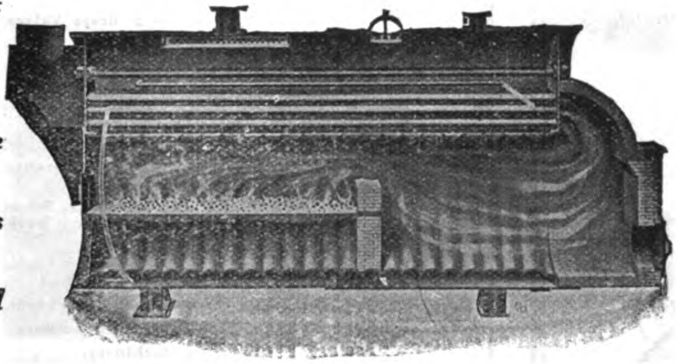

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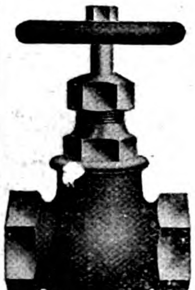

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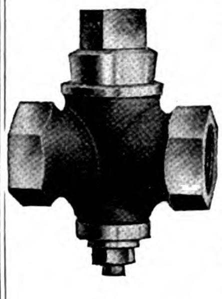

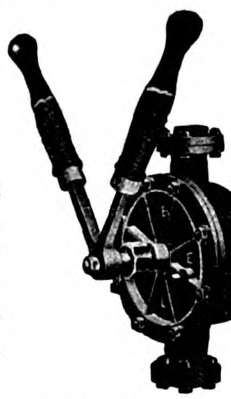

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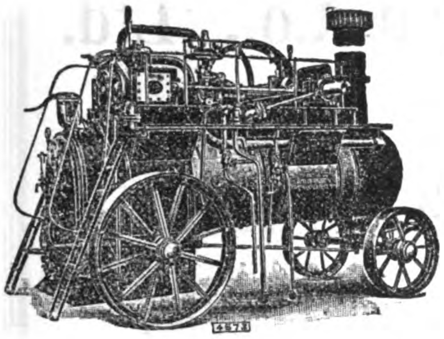

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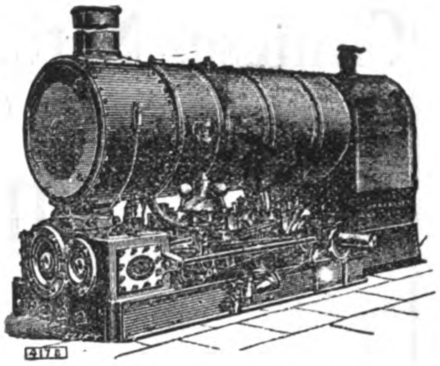

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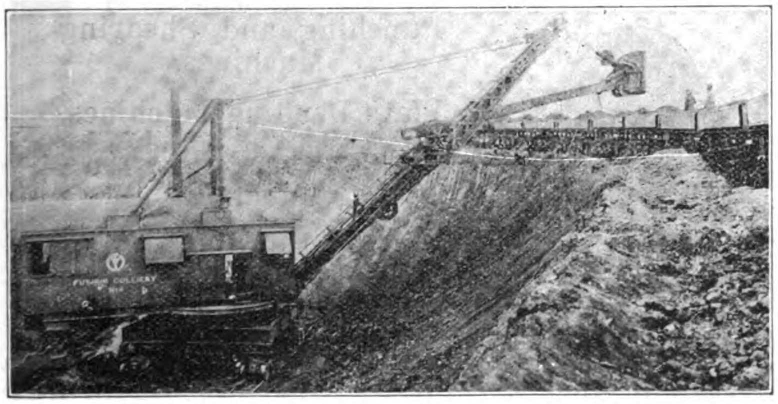

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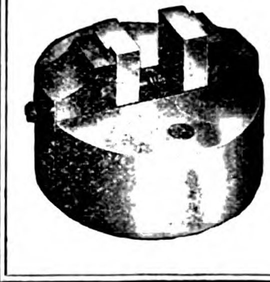

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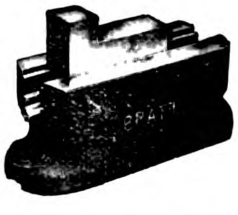

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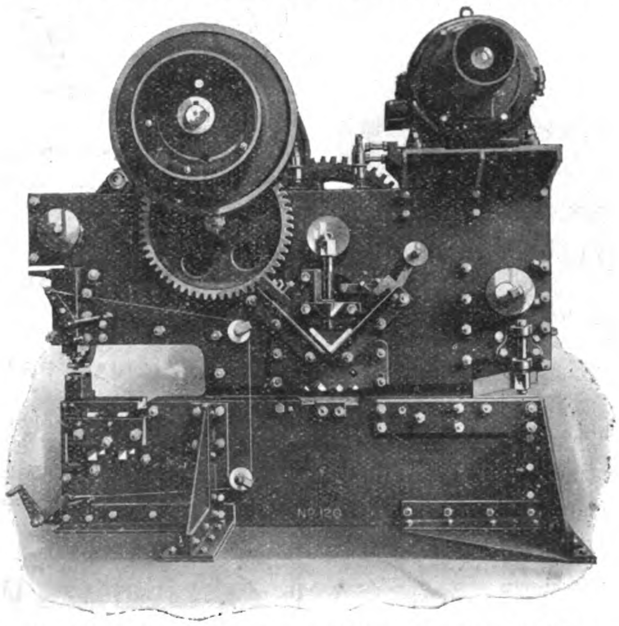

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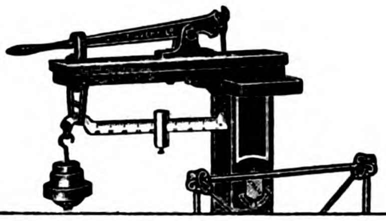

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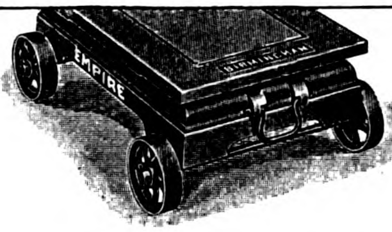

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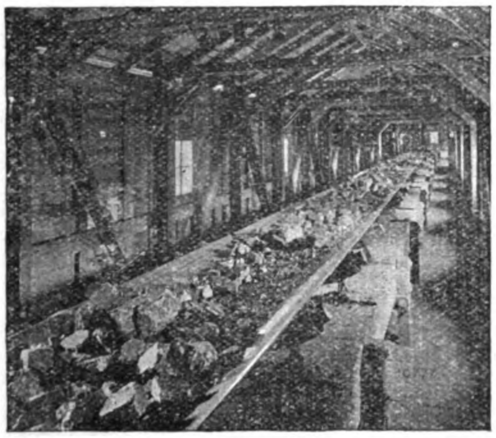

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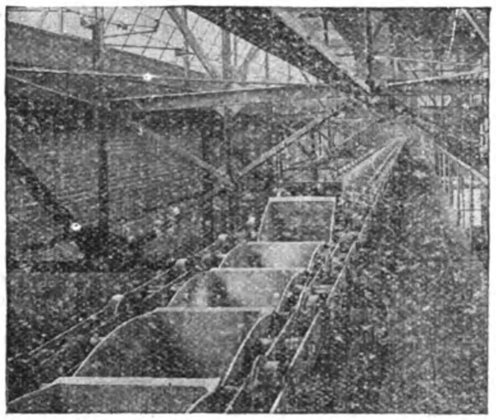

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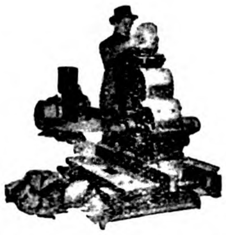

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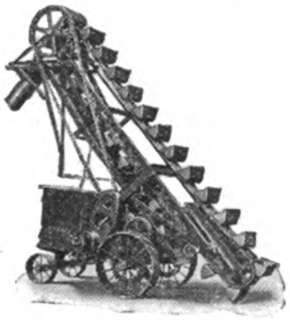

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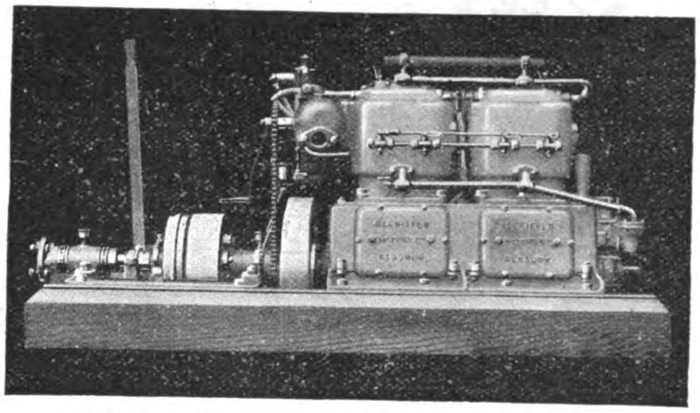

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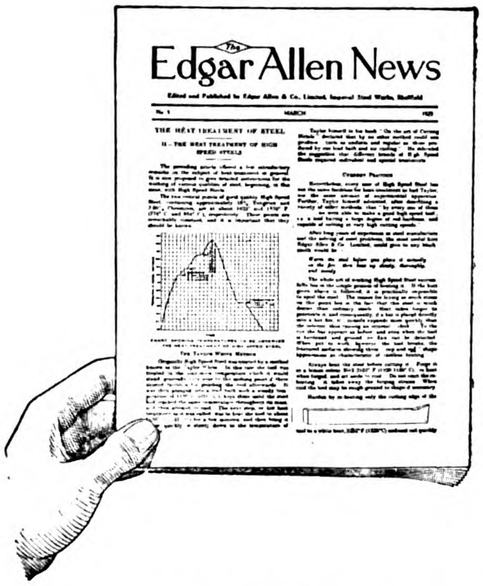

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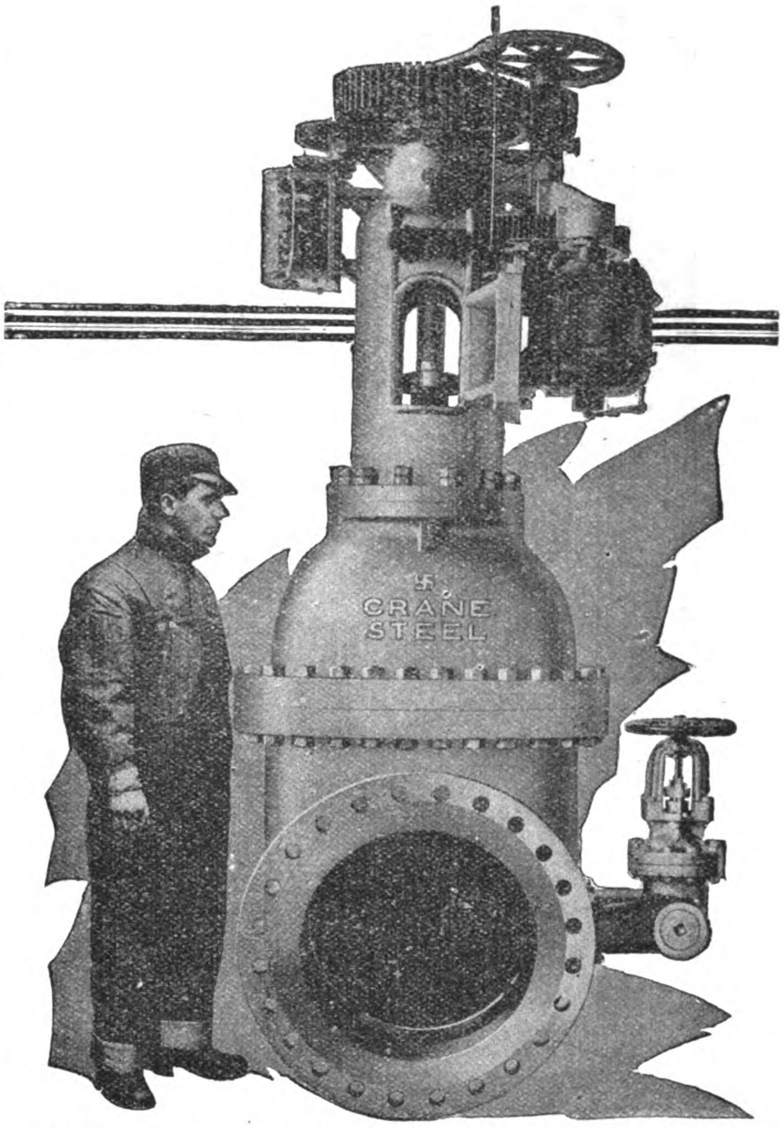

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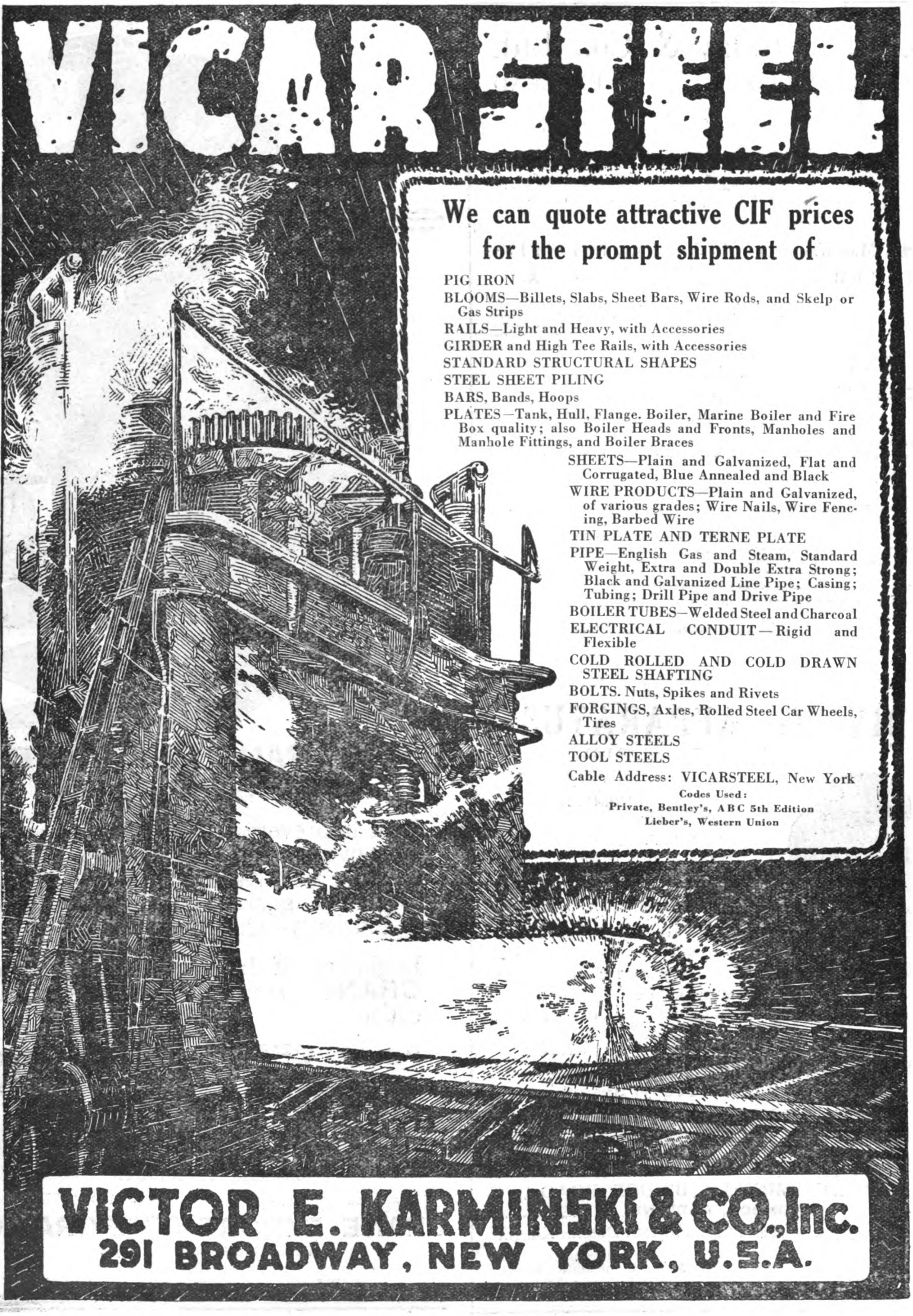
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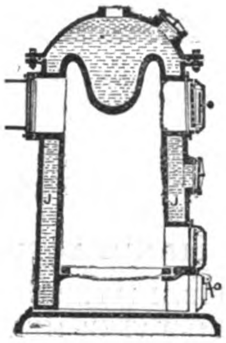

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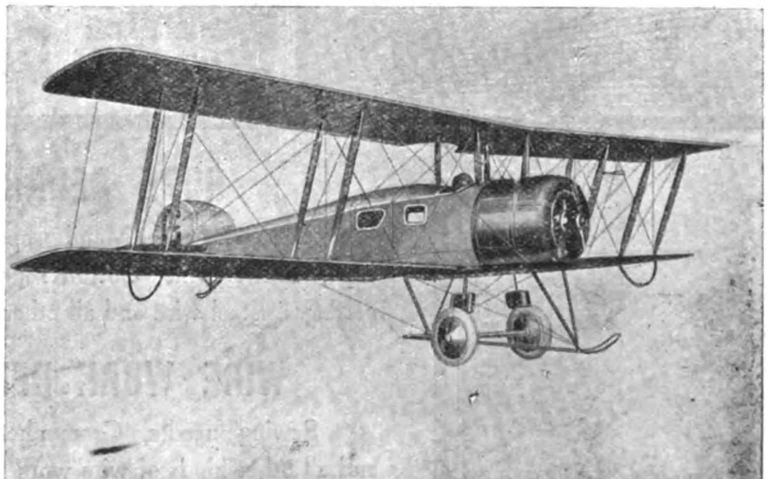

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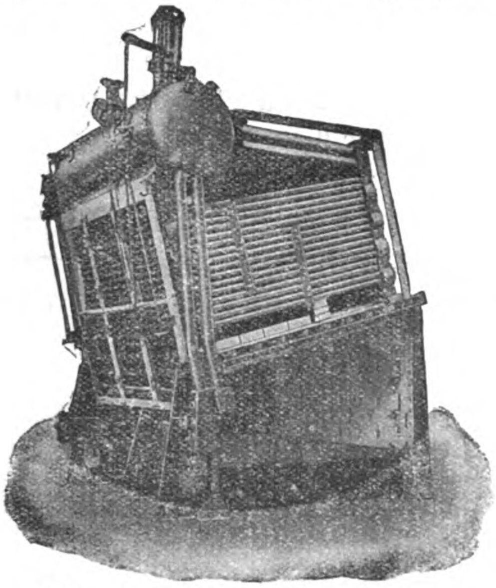

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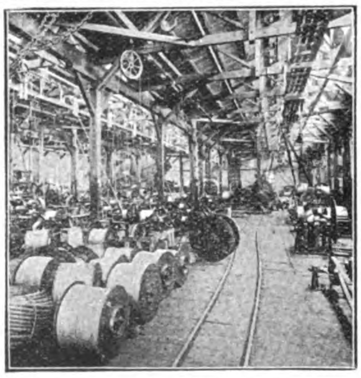

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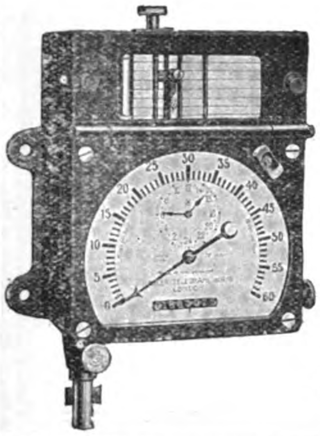

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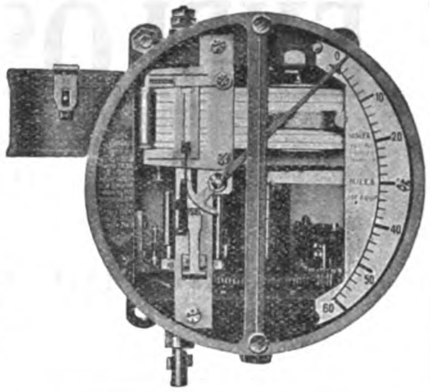

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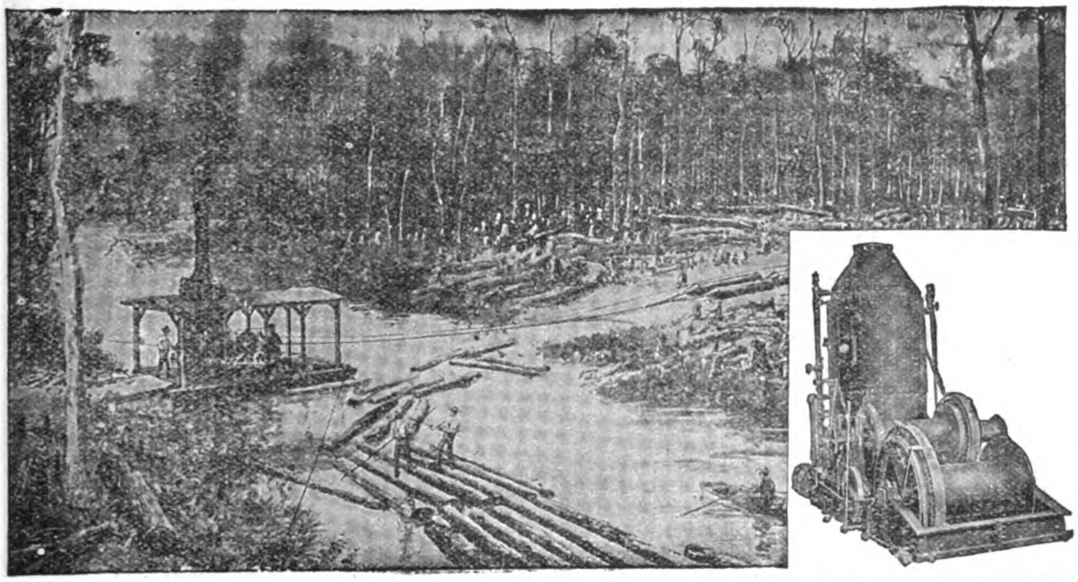

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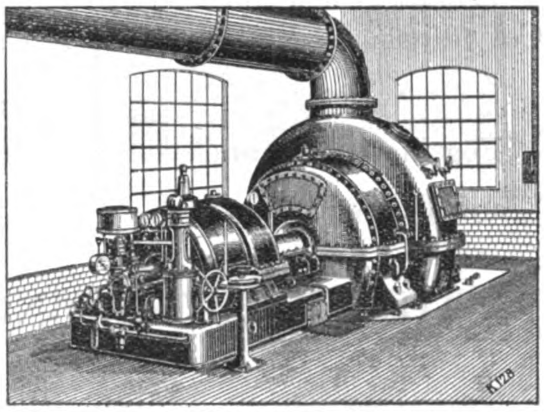

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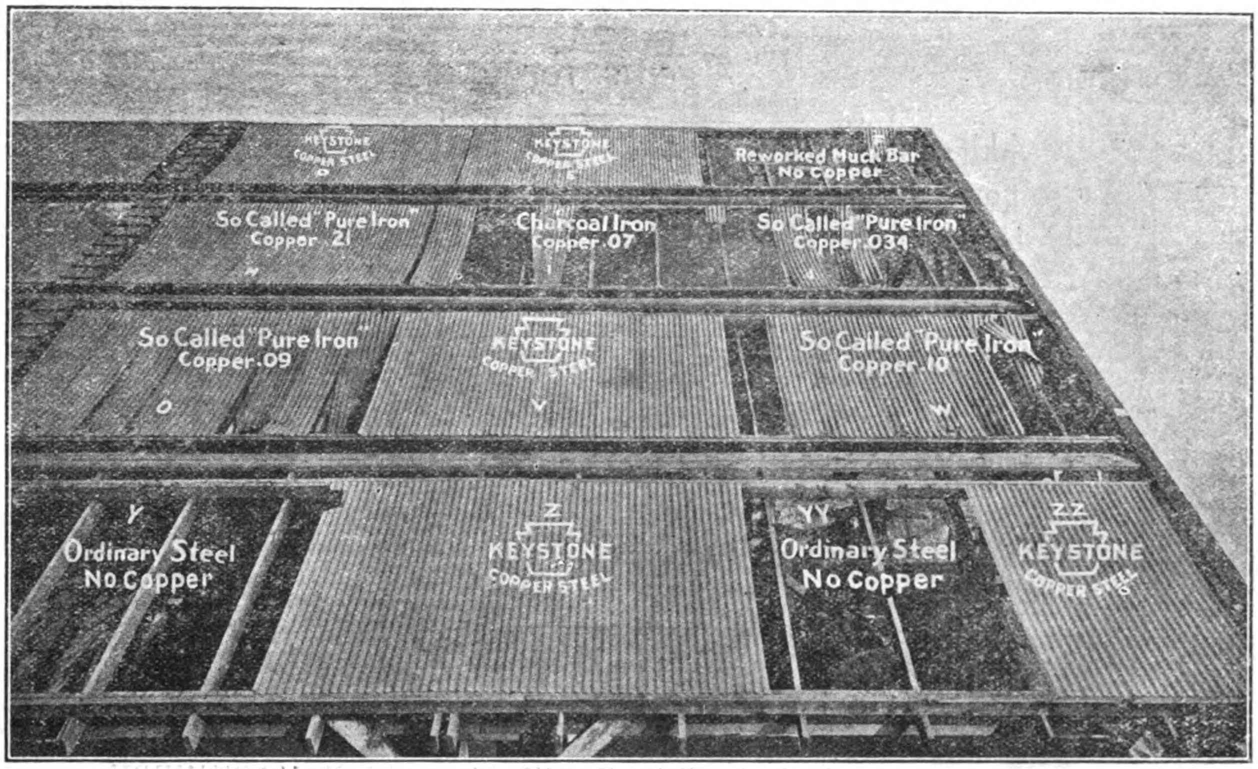

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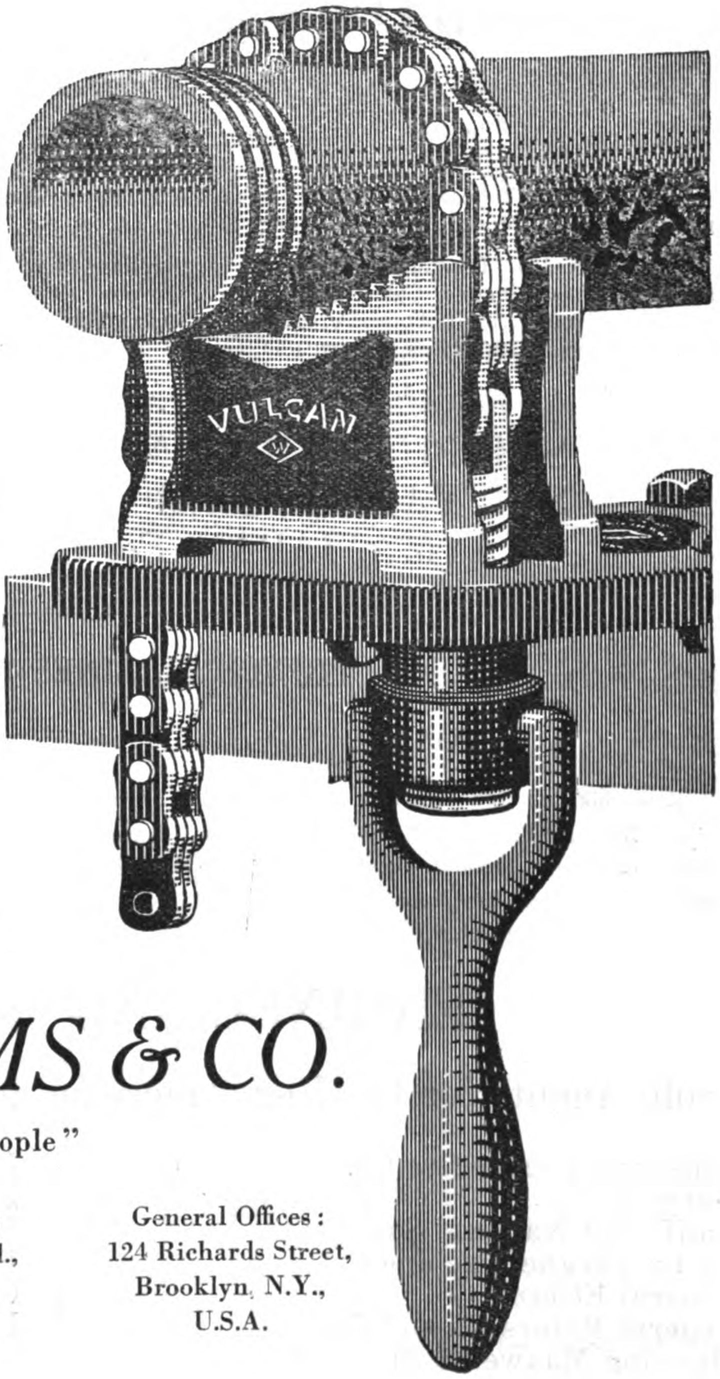

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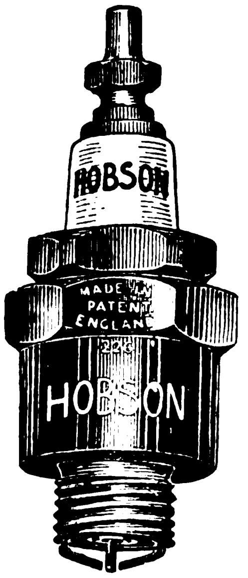

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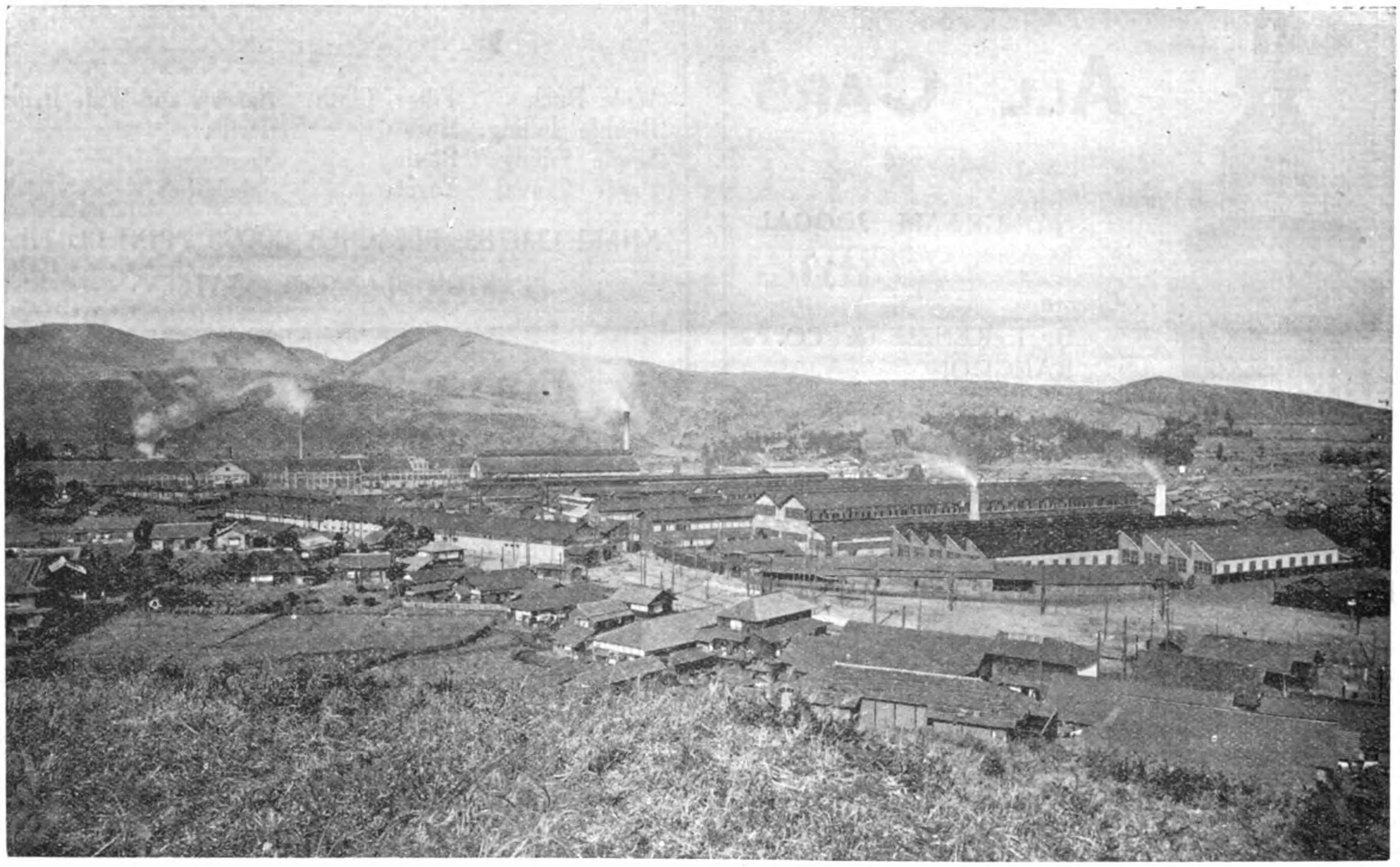

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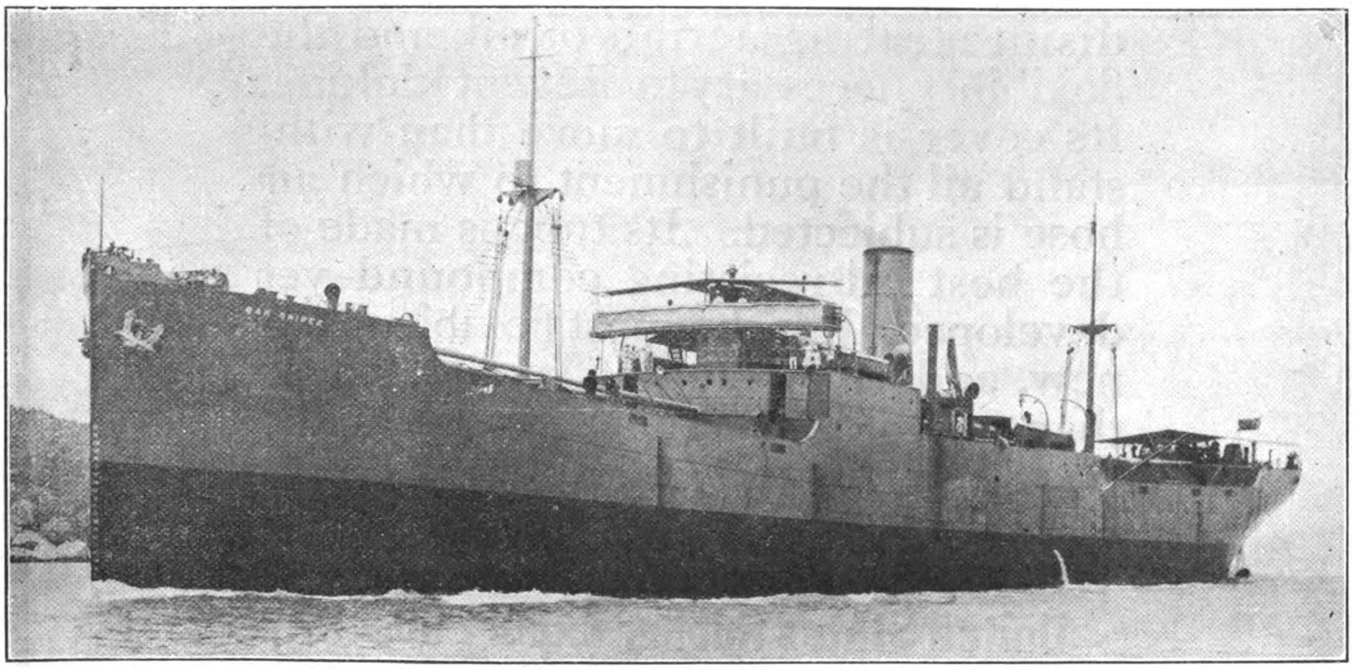

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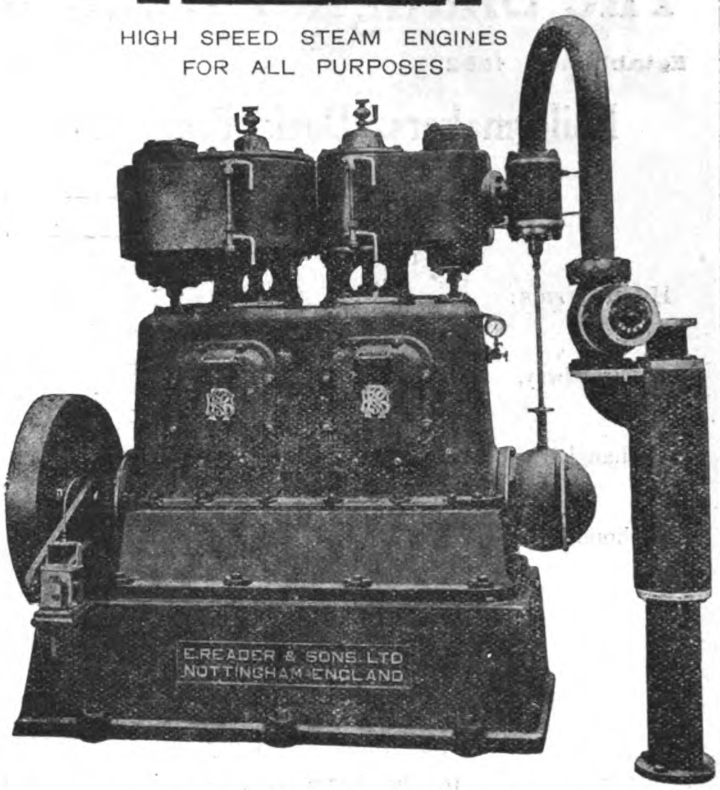

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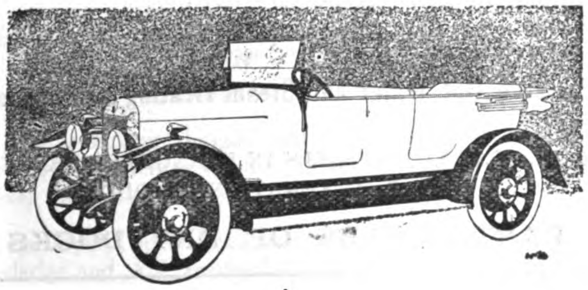

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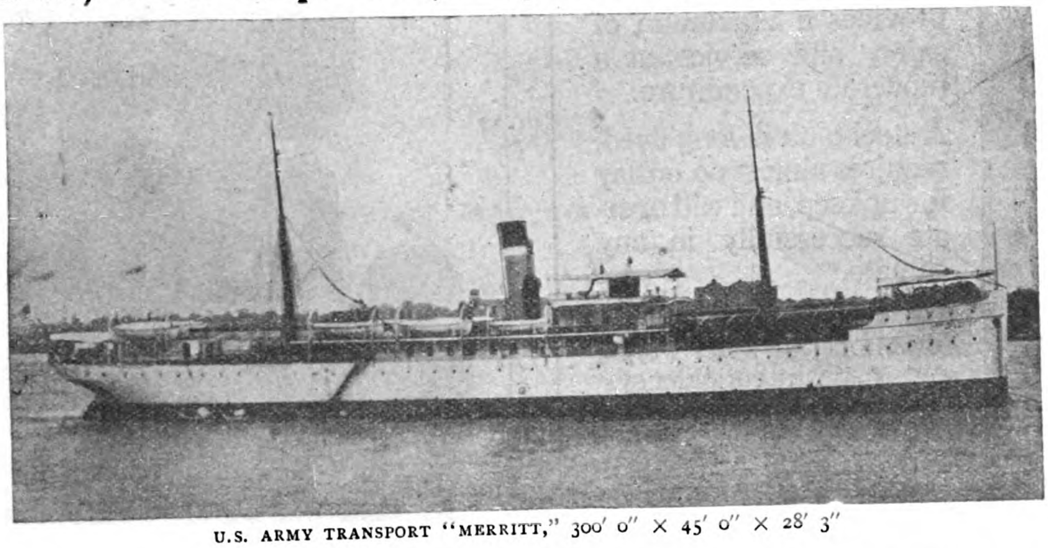

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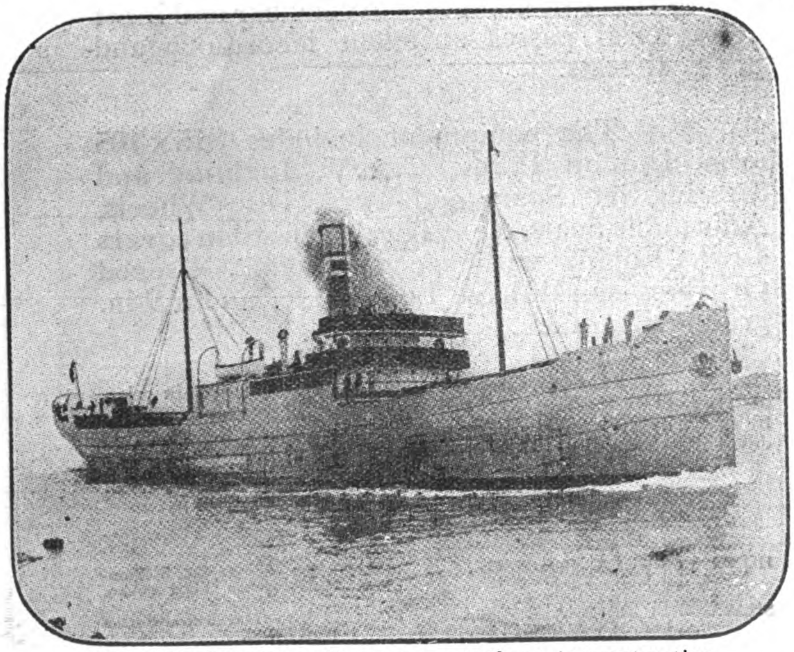

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Cosmopolitan Dock ...	532 feet	77 feet	24 feet
International Dock ...	528 ,,	77 ,,	23 ,,
New Dock	450 ,,	74 ,,	21 ,,
Old Dock	399 ,,	53 ,,	16 ,,
Tunkadoo Dock ...	350 ,,	67 ,,	16 ,,

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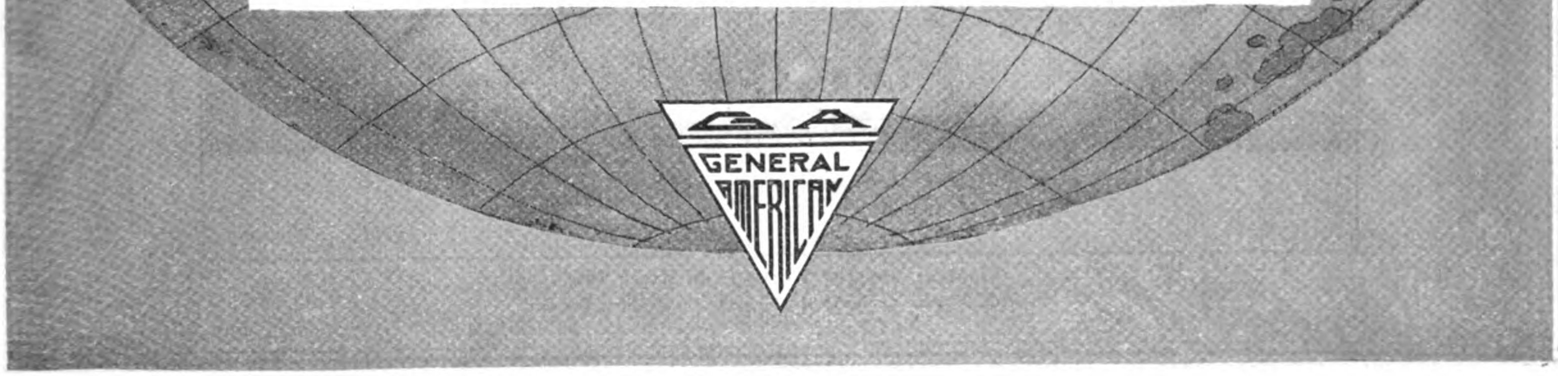

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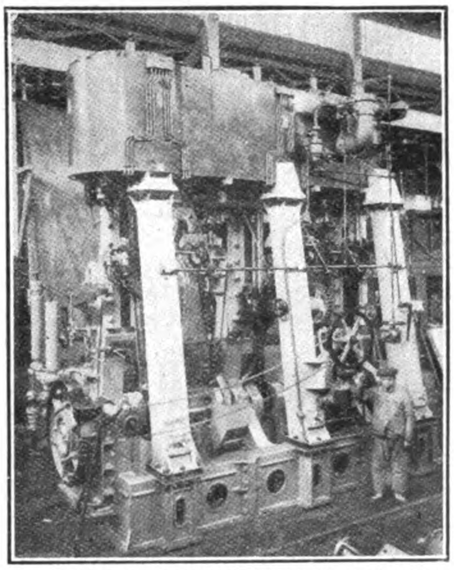

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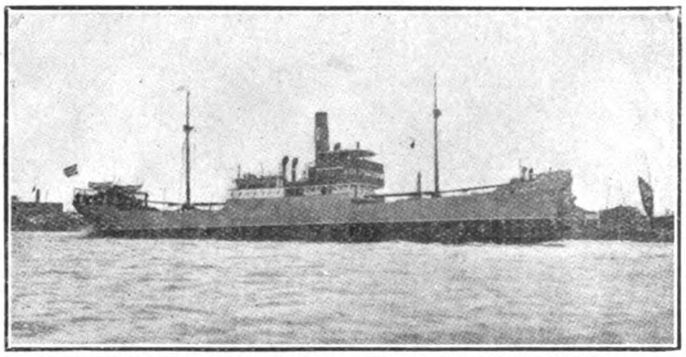

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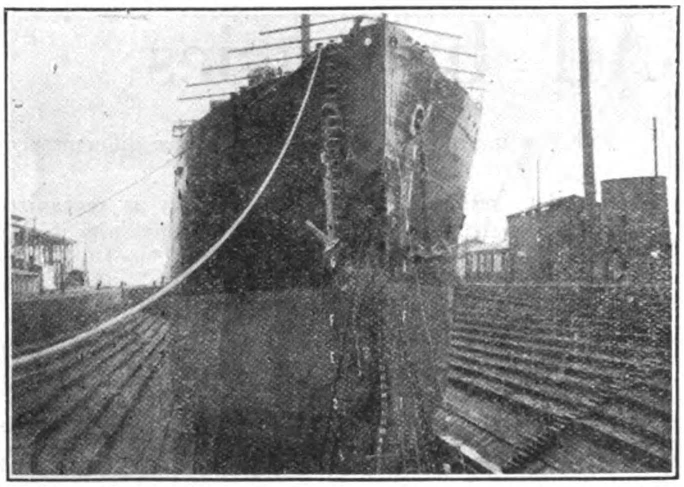

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Length	577'-0"
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Patent Slips

for vessels up to 200-ft. long

Vessels docked promptly

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Vessels undergoing repairs accommodated at wharves alongside Works.

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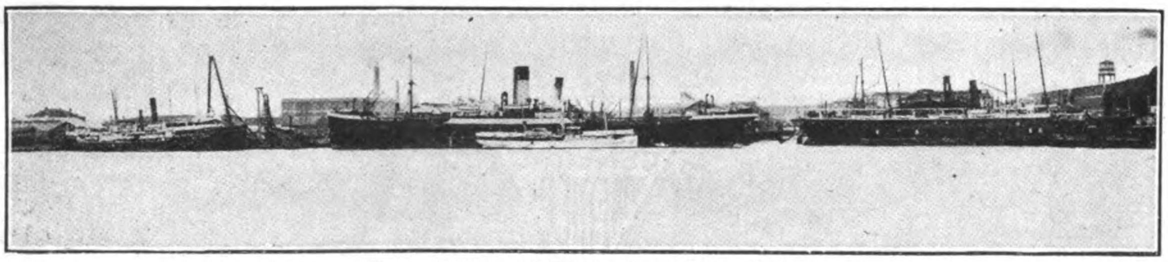
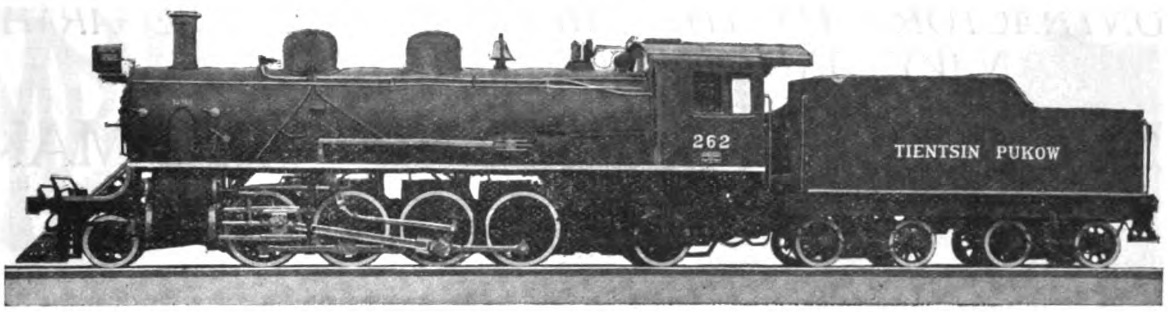
THE PROPERTY OF THE COMPANY COVERS AN AREA OF ABOUT 40 ACRES with a RIVER FRONTAGE of 1,800-ft.



General View of Works from River Side

Showing 8 Steamers Berthed Alongside Undergoing Repairs.

NEW POWER



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Total Weight of Engine, 198,000 pounds; Weight on Drivers, 142,500 pounds; Diameter of Drivers, 54 inches; Boiler Pressure, 200 pounds; Cylinders, 20 X 28 inches; Maximum Tractive Power, 35,300 pounds.

The Tientsin-Pukow Railway is a north-and-south line in China. The north-end at Tientsin connects with the Peking-Mukden line. The south-end terminates at Pukow, across the Yangtze River from Nanking, at which point ferry connection is made with the Shanghai-Nanking line. At Tsinanfu connection is made with the Shantung Railway, and at Hsuchowfu connection is made with the Pienlo System.

The distance from the central station at Tientsin to Pukow is 627 miles. In addition there are branches to mines and canals amounting to 60 miles.

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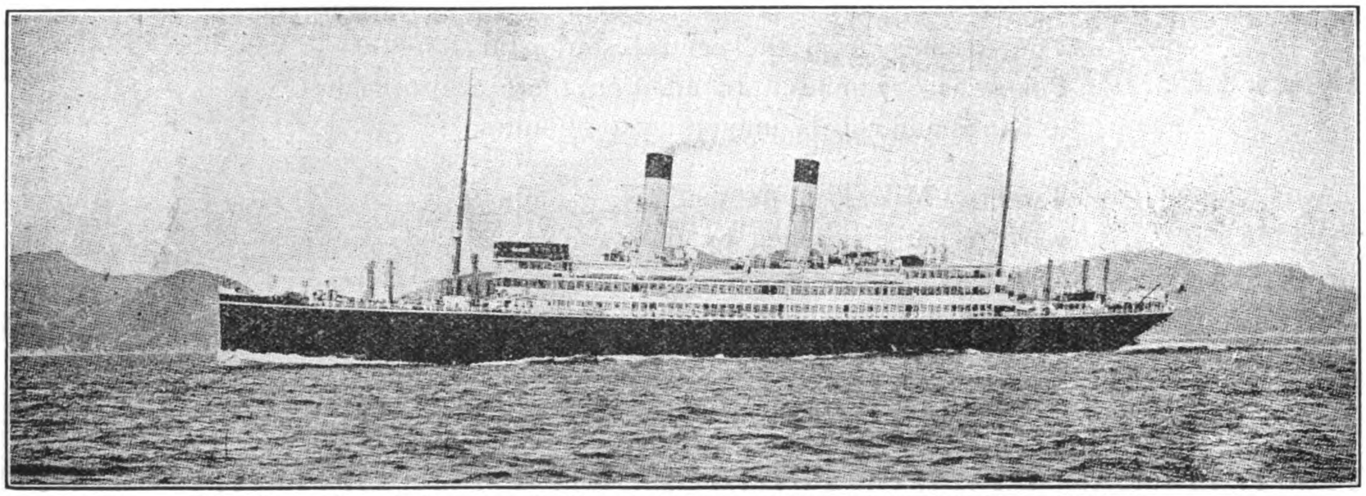

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(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

DOCK No. 1

Extreme Length - - - - -	523	Ft.
Length on Blocks - - - - -	513	,,
Width of Entrance on Top - -	89	,,
,, ,, ,, ,, Bottom-	77	,,
Water on Blocks at Spring Tide	26½	,,

DOCK No. 2

Extreme Length - - - - - -	371	Ft.
Length on Blocks - - - - - -	350	,,
Width of Entrance on Top - - -	66	,,
,, ,, ,, ,, Bottom -	53	,,
Water on Blocks at Spring Tide -	24	,,

DOCK No. 3

Extreme Length - - - - - -	728.9	Ft.
Length on Blocks - - - - -	714	,,
Width of Entrance on Top - -	99½	,,
,, ,, ,, ,, Bottom -	88½	,,
Water on Blocks at Spring Tide	34½	,,

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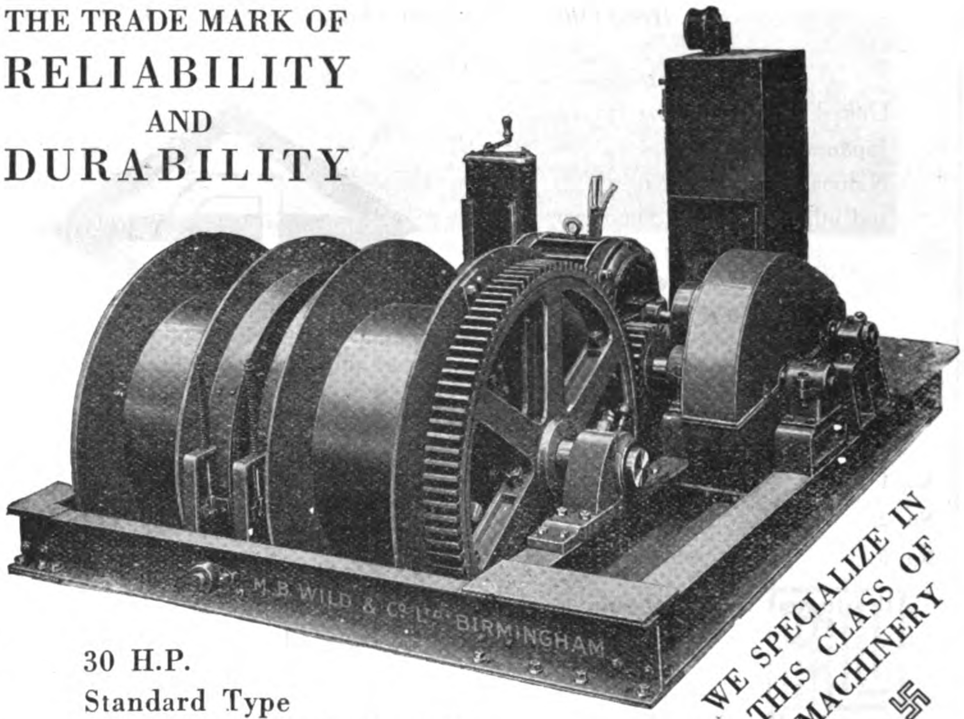

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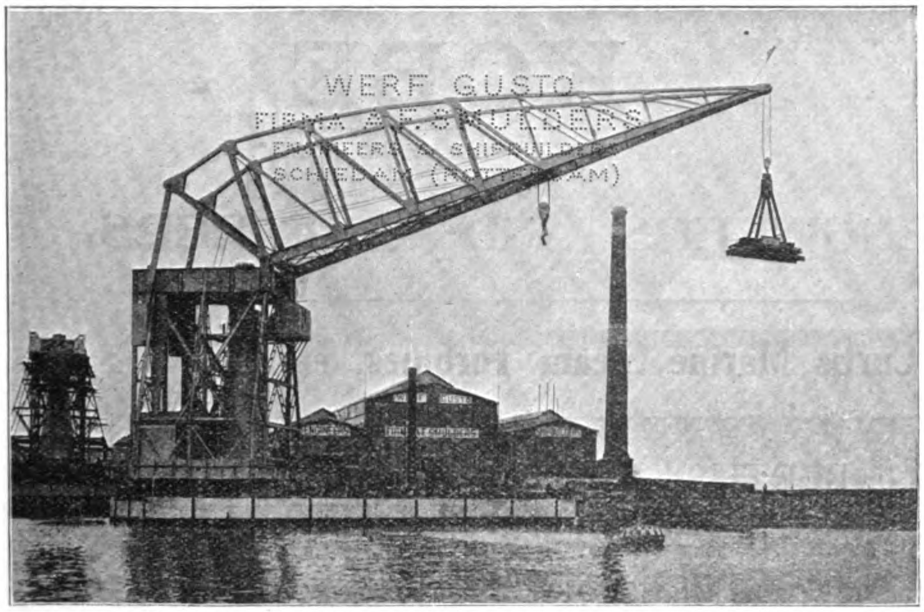

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No. 3	480′ × 63′ × 21½′

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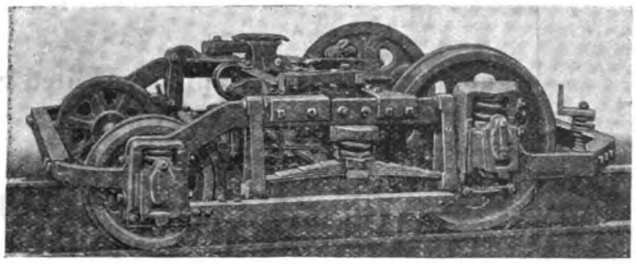
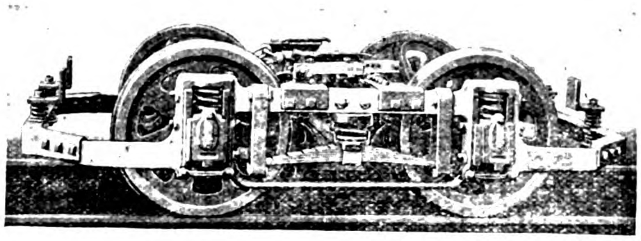


Single-Motor Truck No. 39-E



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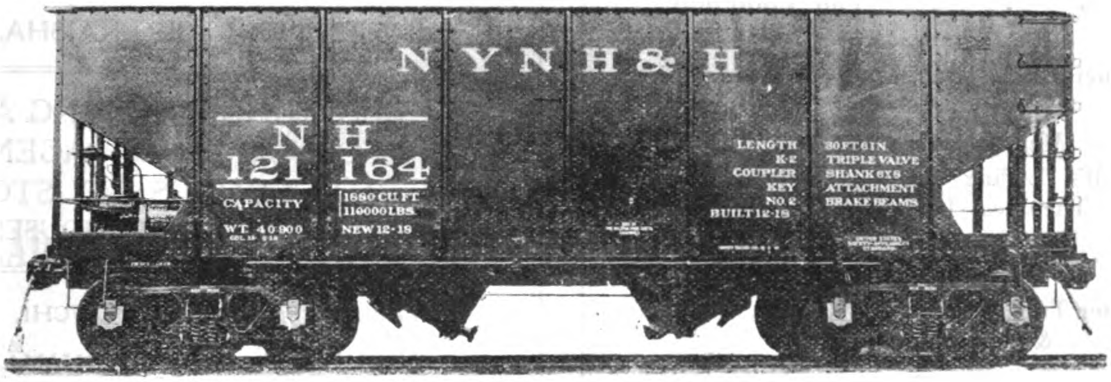

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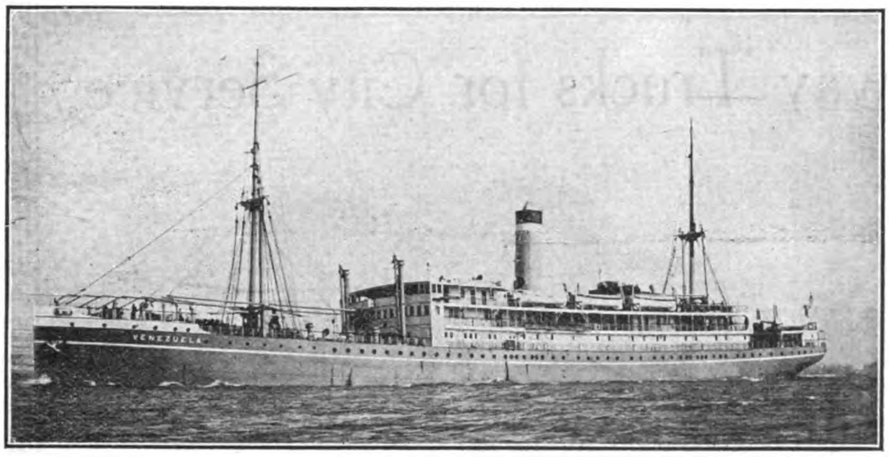

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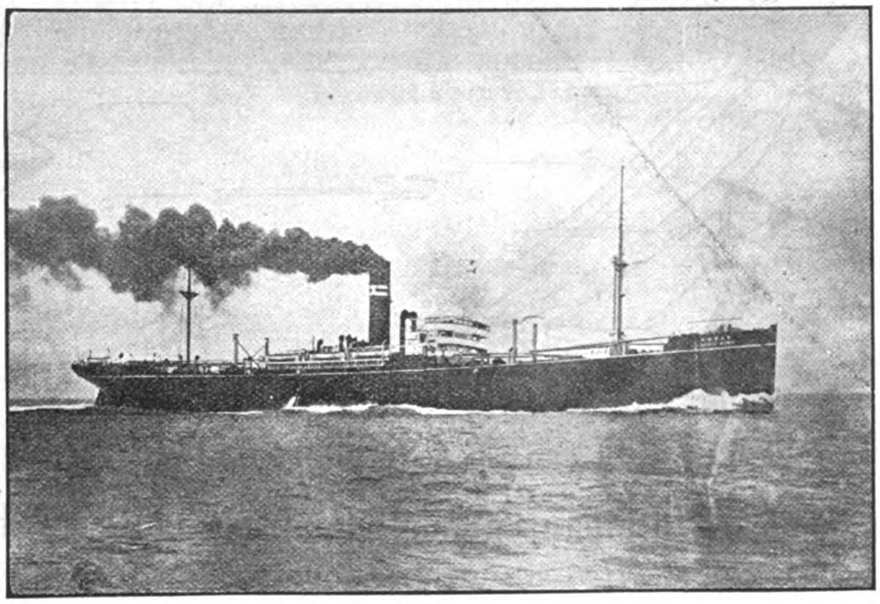

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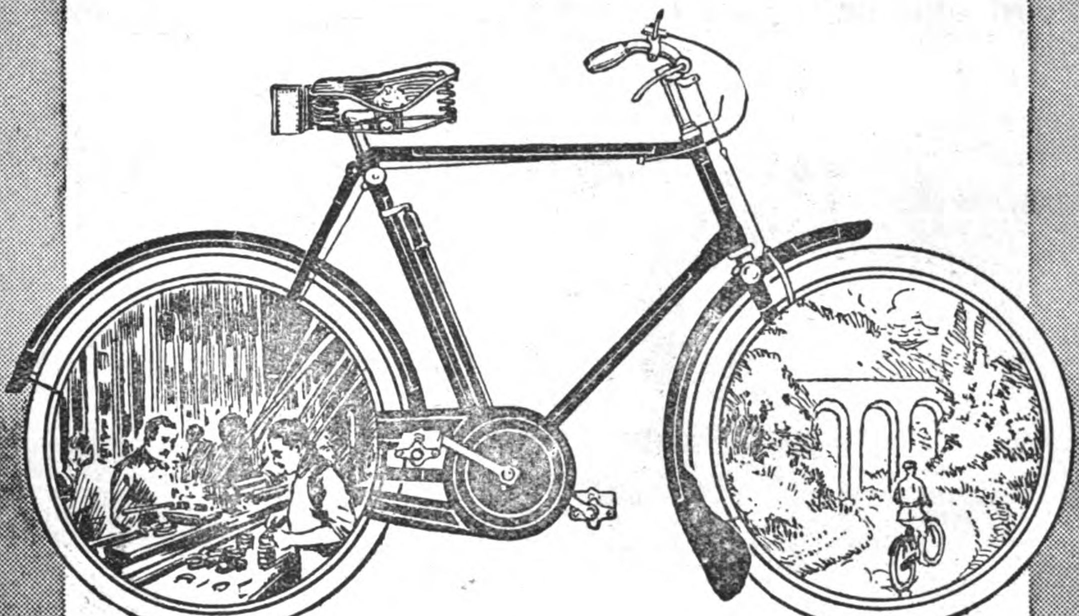

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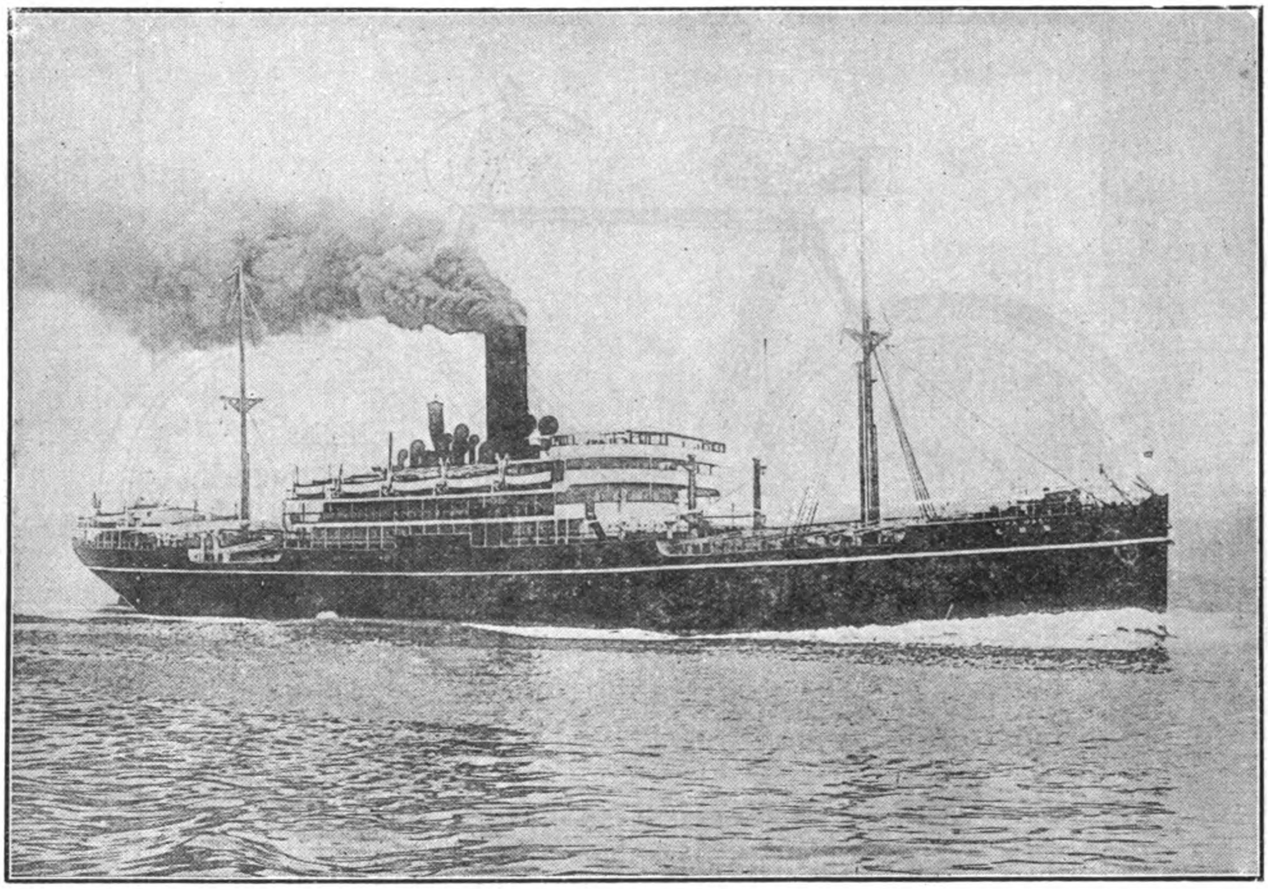

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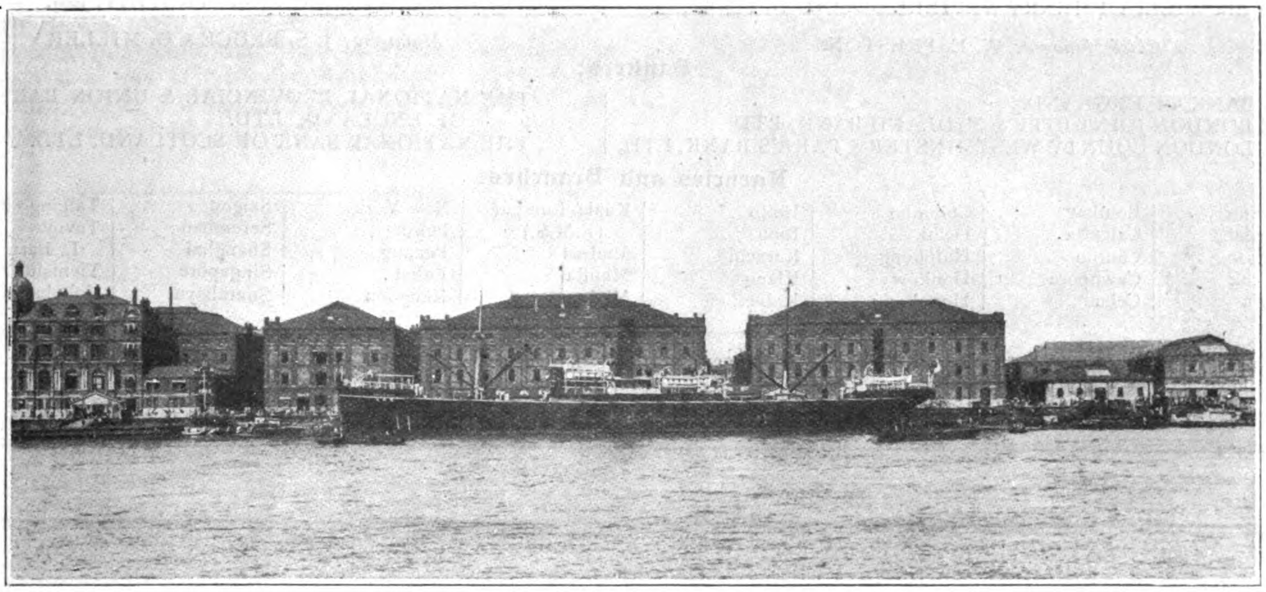

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The Far Eastern Review

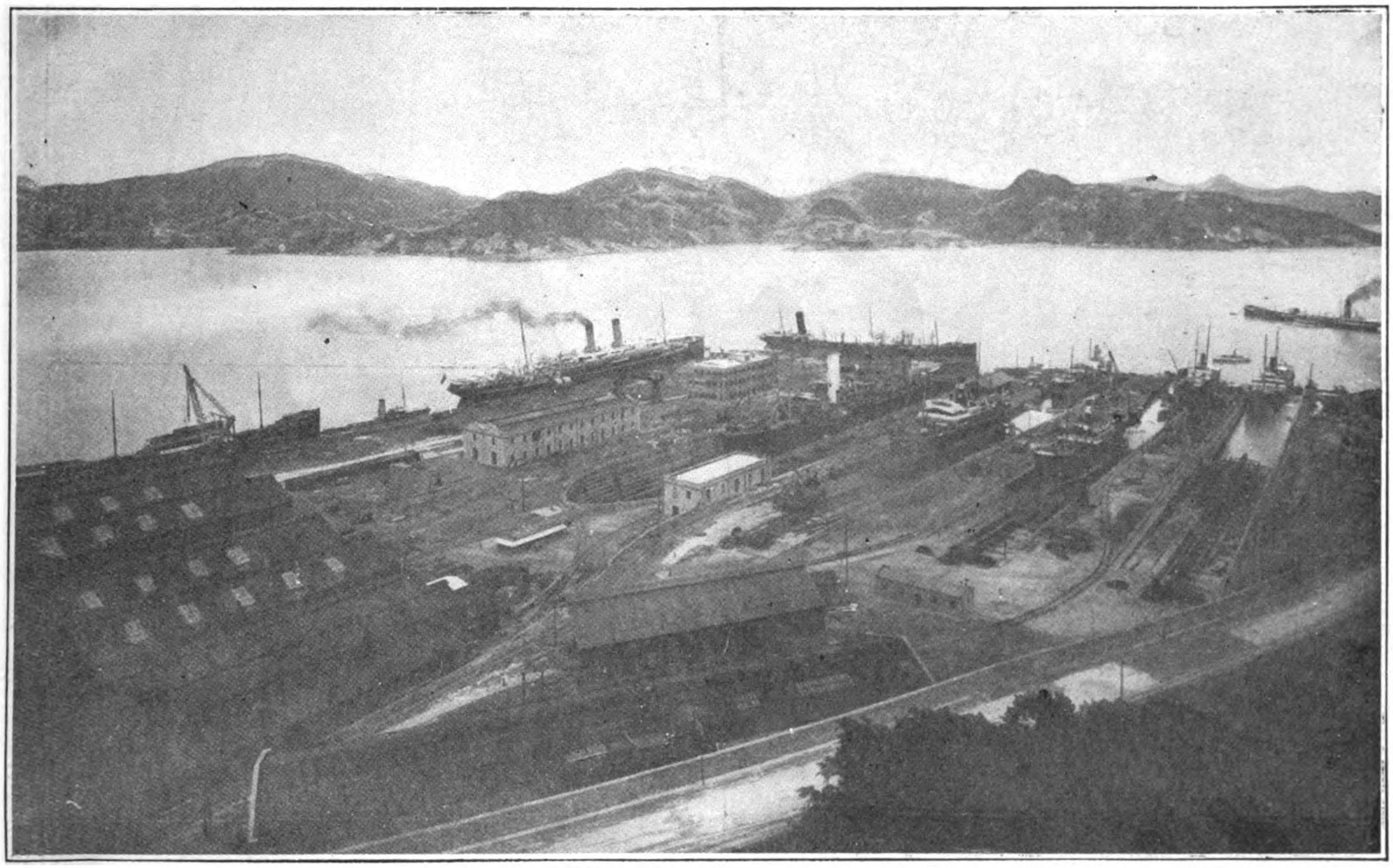
ENGINEERING FINANCE COMMERCE

VOL. XVII SHANGHAI, JANUARY, 1921 No. 1

FAR EASTERN SHIPBUILDING

I.—HONGKONG

HONGKONG has been called the gateway of the Far East, because every ship which comes into the China Sea passes through its magnificent harbor. It was one of the early governors of the Colony who told the local merchants that they could only regard the place as a sort of "bonded warehouse" where they might deposit their goods. While industries have and still are springing up, and the industrial future of Hongkong is very bright, yet the central fact of the local world of commerce, the central fact of everything in the Colony is shipping, and with this ship-building. Shipping and shipbuilding constitute the life blood of of the Colony, as was fully set out in THE FAR EASTERN REVIEW, "Ports of the Orient Number," February, 1919.

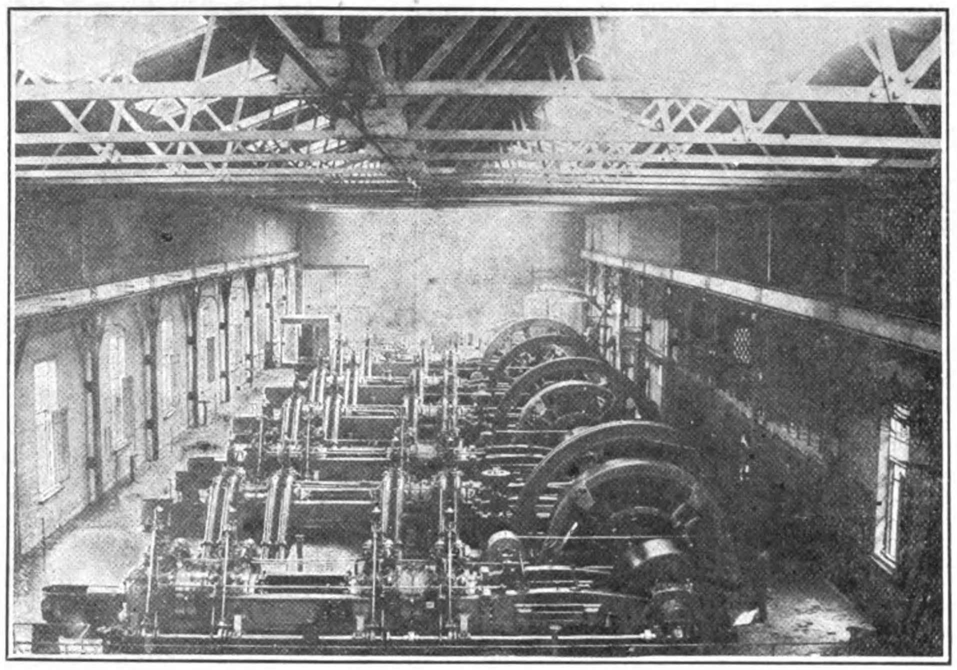


General View of the Taikoo Dockyard, Hongkong

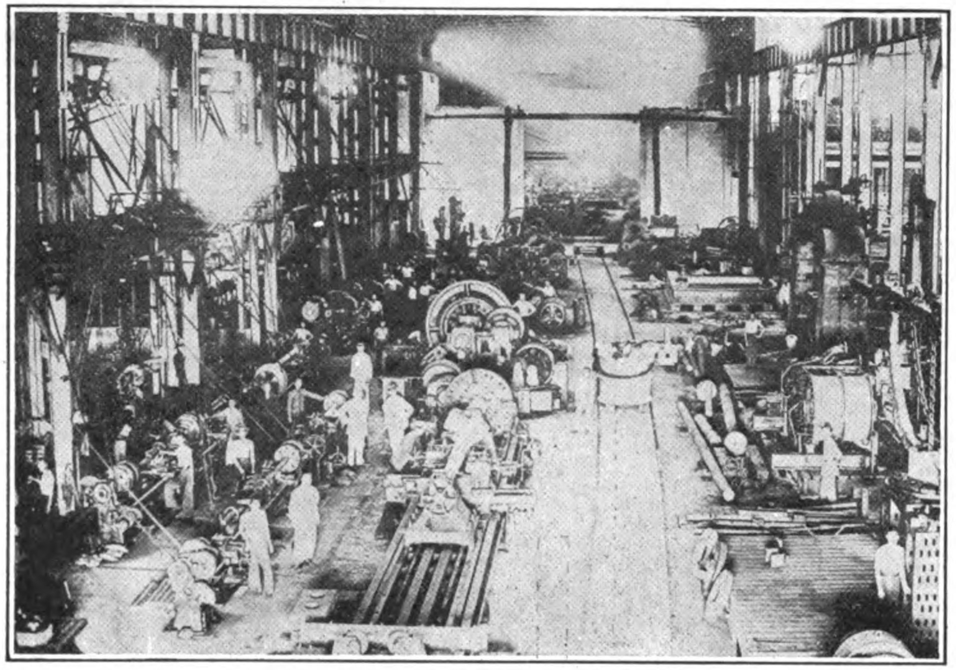
The year 1857 marks the commencement of what is to-day Hongkong's greatest industry—ship-repairing and shipbuilding—for in that year the Colony's first dock was established at Aberdeen by Mr. Douglas Lapraik and Captain J. Lamont. To-day the three large dockyards—one at Kowloon and two on the island—employ some thousands of natives and a large number of Europeans. Ocean-going steamers have been and are still being built there, engines and hulls, and there is also a good deal of ship repairing for lines travelling all over the Far East.

In 1856 the dock owned by Mr. Couper (formerly of the P. & O. service) at Whampoa was more or less destroyed and Couper wes captured and disappeared. His son, who was indemnified to the amount of $120,000, then rebuilt the dock and eventually sold it to what has since become the Hongkong and Whampao Dock Company. This Company was established in 1863. A few years later it absorbed the dockyard enterprise at Aberdeen and has been steadily growing ever since. The original founders were Mr. James Whittall of Messrs. Jardine, Matheson & Co.; Mr. (now Sir) Thomas Sutherland, whose name is well known to this generation on account of its long association with the P. & O. Co., from the chairmanship of which he retired some time ago; and Mr. Douglas Lapraik. The Company was formed with a capital of $240,000. This has been increased until it now stands at $3,000,000.

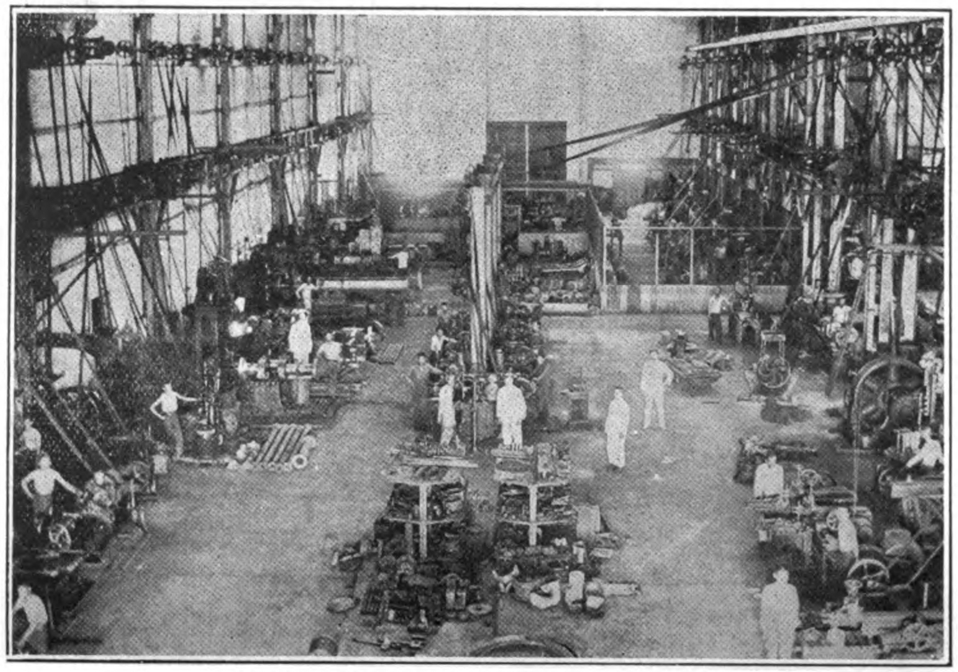
TAIKOO DOCKYARD & ENGINEERING CO. OF HONGKONG



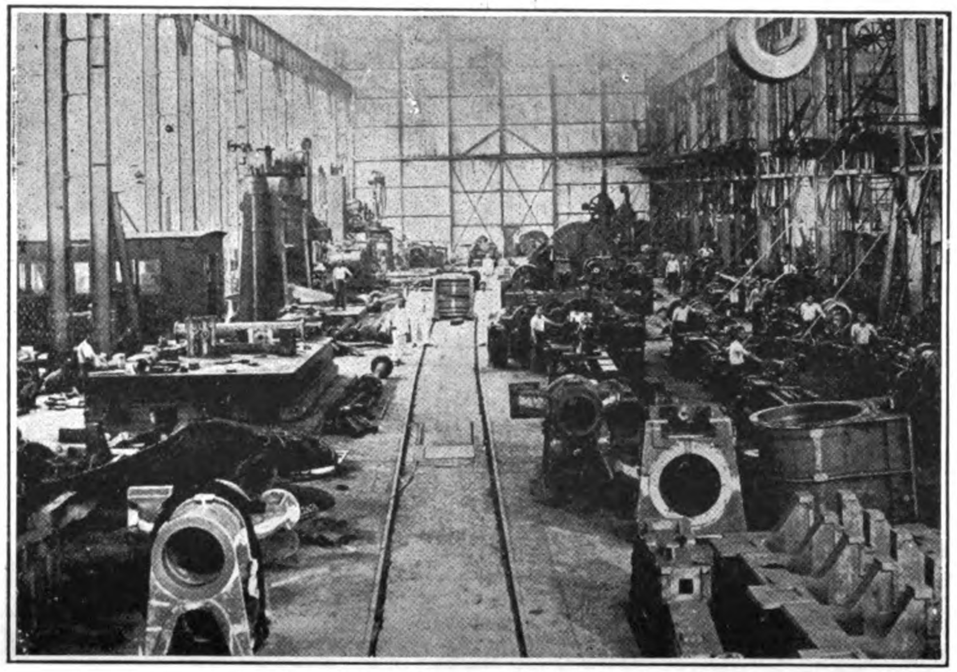
Power House, Taikoo Dockyard



Section of Machine Shop, Taikoo Dockyard



Section of Machine Shop, Taikoo Dockyard



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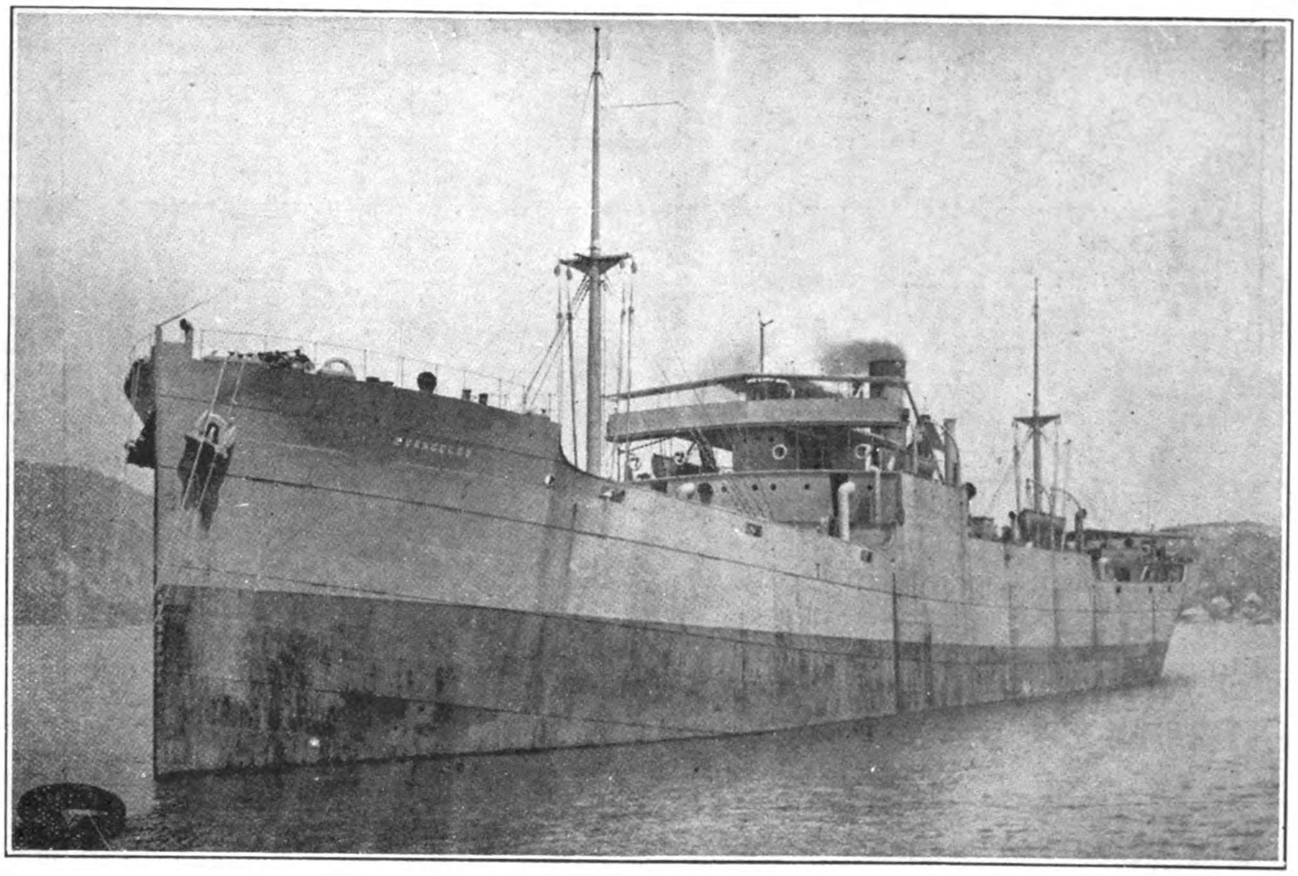


S.S. [illegible]

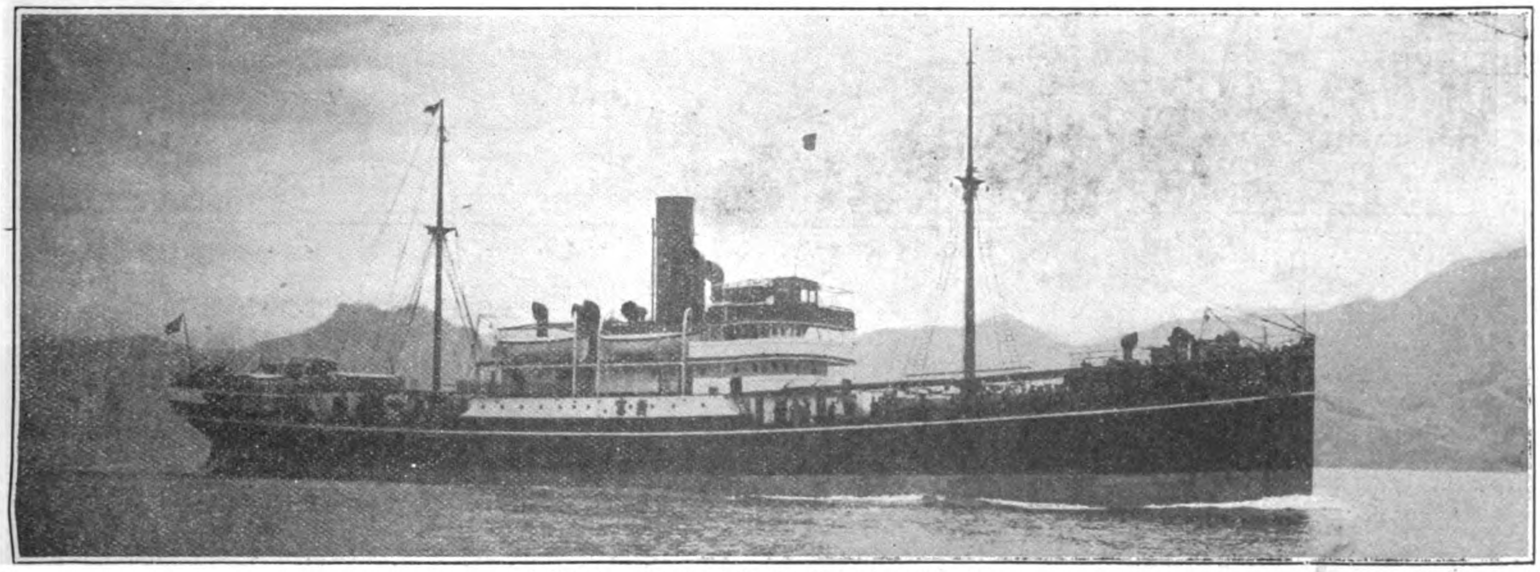
In the early days the shipyard at Whampoa was a most important establishment. From 1866-69 all the large ships of the English and French mail companies were docked there, but, finally, the shipyard was sold to the Chinese and European ships where henceforth excluded. In 1875 the shares of the company stood at 60 per cent. discount and the dividends were most unsatisfactory. This position of the company was attributed in a large measure to the competition of the Cosmopolitan Dock and of a rival establishment owned by Captain Sands. In 1879 and 1880 these enterprises were absorbed and the position of the company improved considerably. In 1880, also, the Admiralty, becoming anxious about the docking facilities of their warships on the China Station, gave the company a subsidy of £25,000 toward the cost of building a large new dock, on the condition that the warships should have the right of priority of entrance for a period of twenty years. The dock was completed in 1888 and the Admiralty privilege ended in 1908 in which year the Naval Dockyard and the Taikoo Dockyard came simultaneously into existence.

The Taikoo Dockyard and Engineering Company of Hongkong, Limited

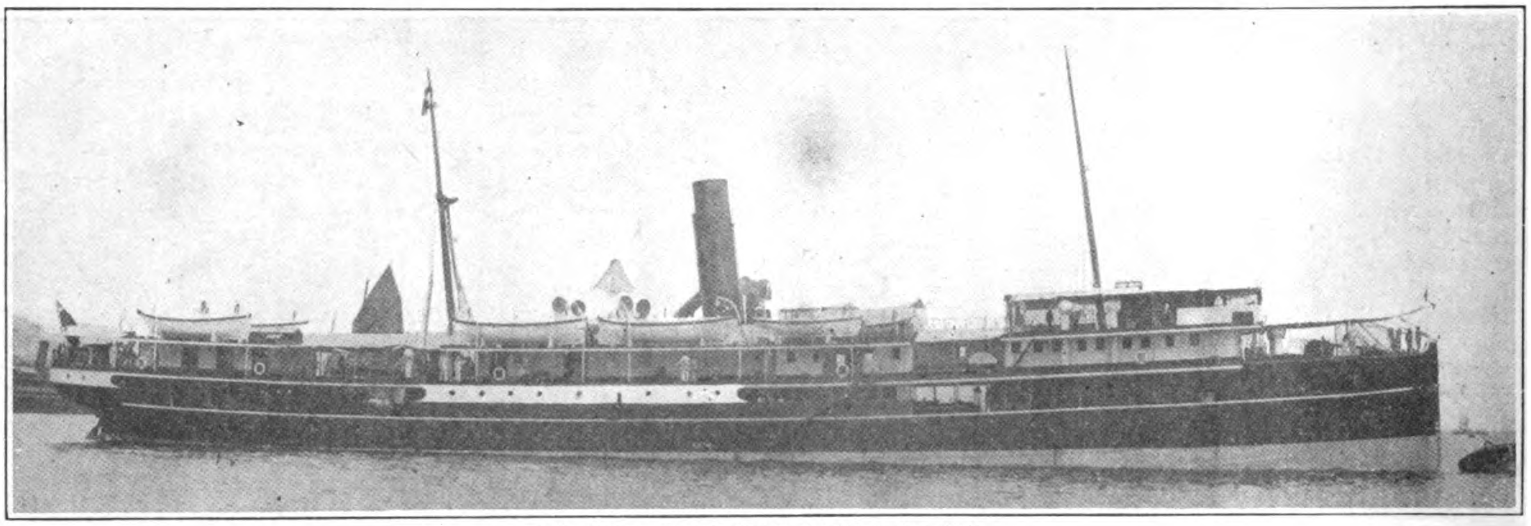
This Company's establishment, covering an area of 53 acres, is situated on the Island of Hongkong, just inside the Lyemun Pass—the northern and deeper entrance to the harbor—the position being convenient to the City of Victoria, between which city and the dockyard the Company runs a ferry launch for the convenience of clients, the journey occupying 20 minutes. There is also an efficient service of electric cars from the city to the main entrance to the dockyard, this route taking half-an-hour. The works have been planned and equipped throughout with all the requirements necessary for the most modern and rapid ship and marine engine construction and repairs, and for overhauling all types of vessels, including warships, both in dry dock and on slipways. All classes of constructional and general engineering work are also undertaken.

The rapid handling of repairs has been made a special feature, and the dockyard is capable of executing such on the largest sized vessels with the utmost despatch.

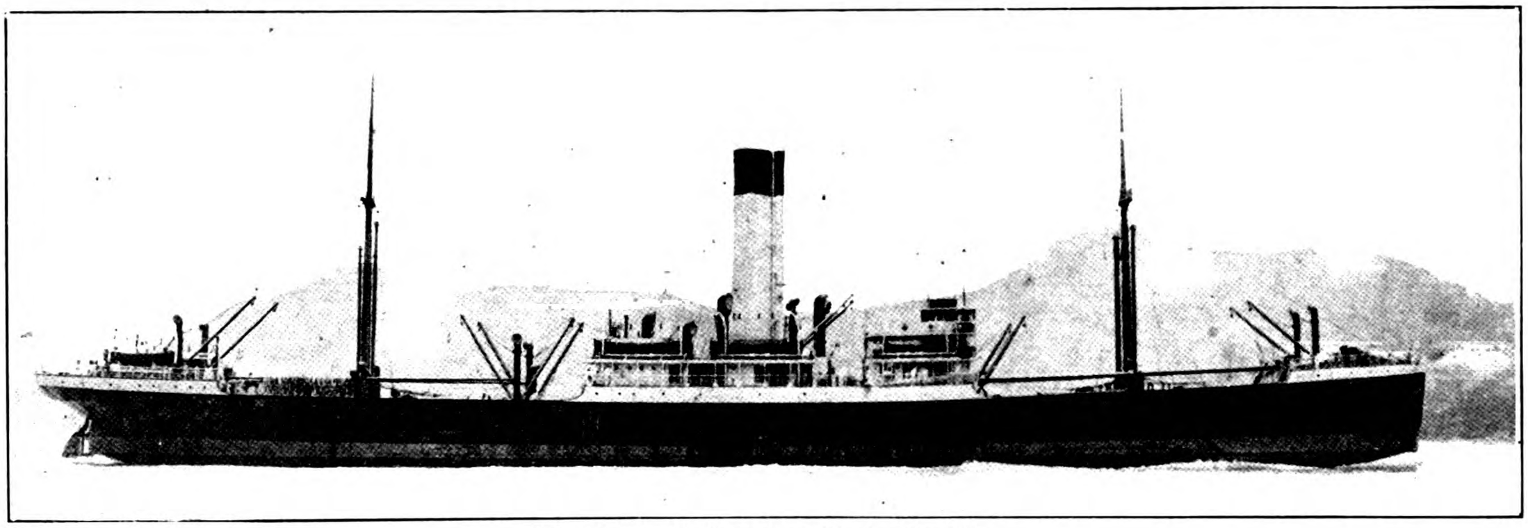
The work is carried on under the supervision of a large staff f Europeans.



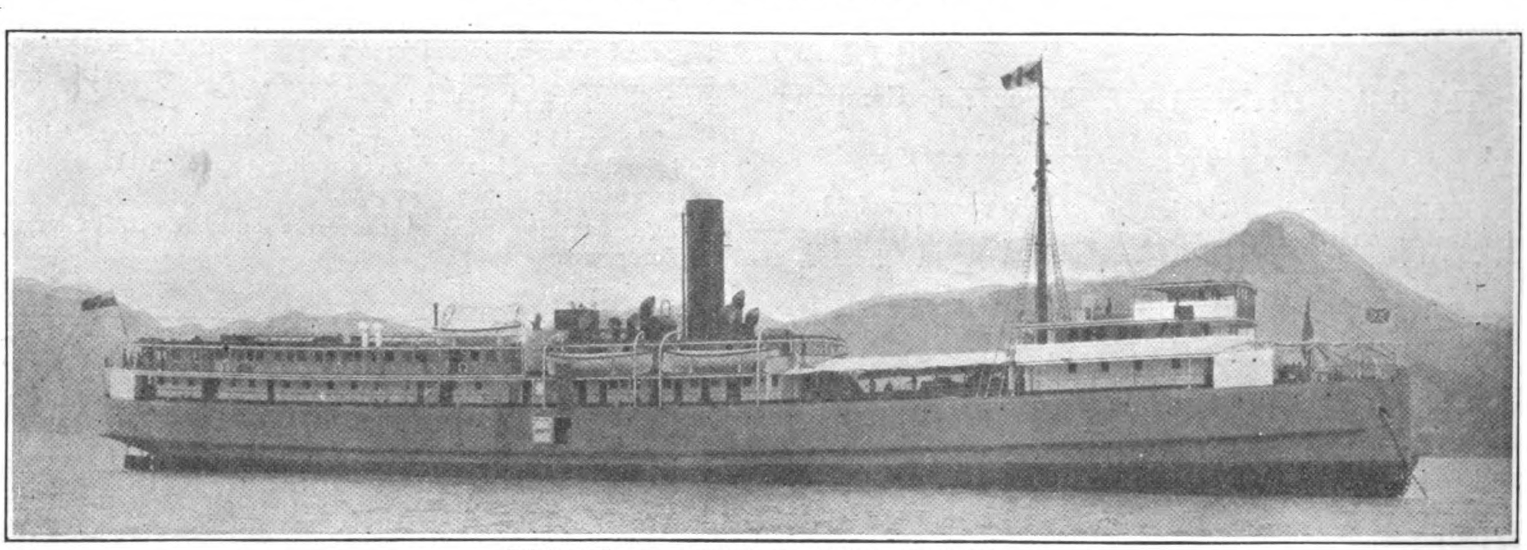
S.S. "Sunning," 310-ft. by 41-ft. by 24-ft. 9-in.



S.S. "Tungchow," 280-ft. by 40-ft. by 19-ft.



S.S. "Laertes," 422-ft. by 52-ft. by 32-ft. 9-in.



T.S.S. "Woosung," 320-ft. by 46-ft. by 14-ft. 8-in.

Dry Dock

The granite dry dock, constructed to British Admiralty requirements, is most conveniently placed for the full and free manœuvring of ships prior to docking, being well clear of any congestion of shipping in the harbor, and with an entrance free from all strong currents.

Its dimensions are :—

787-ft. 0-in. Extreme Length

88-ft. 0-in. Width of Entrance at top.

750-ft. 0-in. on the Blocks

81-ft. 10-in. Width of Entrance at bottom.

120-ft. 0-in. Width at Coping

34-ft. 6-in. Depth of Water over centre of Sill at H. W. O. S. T.

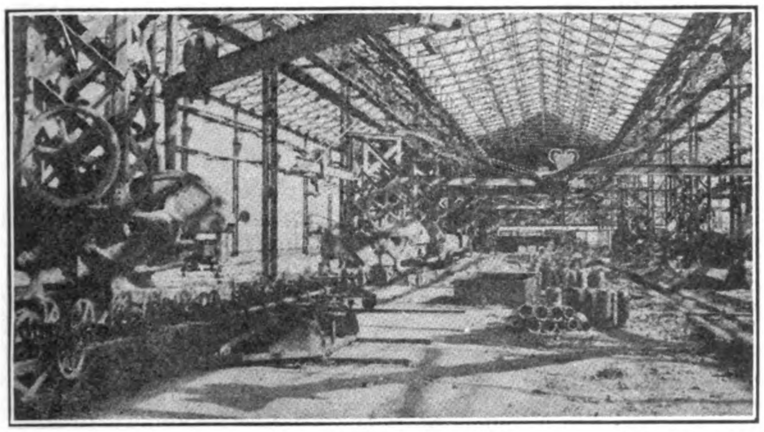
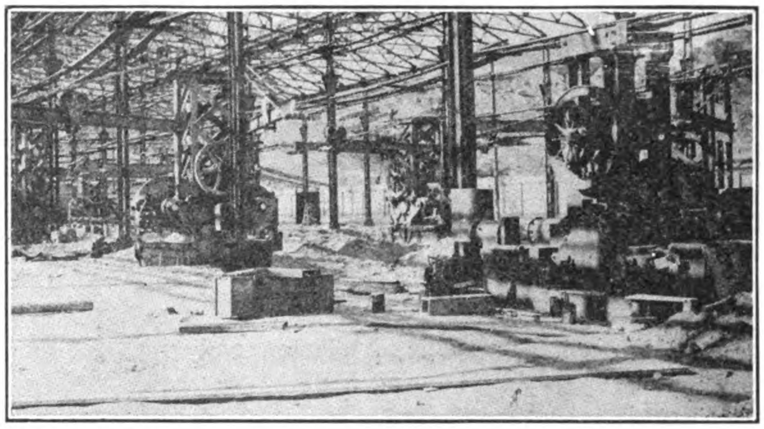
77-ft. 6-in. Width at Bottom

31-ft. 0-in. Depth of Water over sides of Sill at H. W. O. S. T.

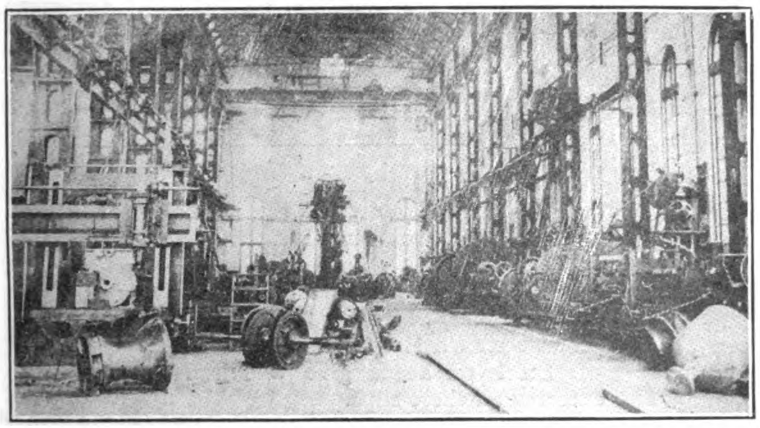
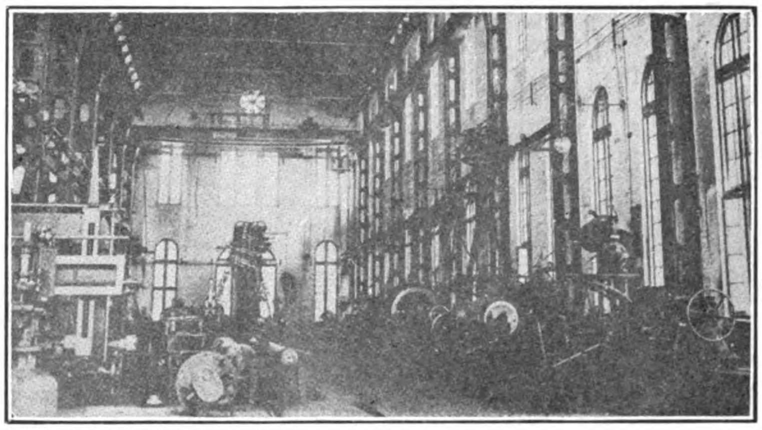
The centre of the sill is 4-ft. 0-in. above the bottom of the dock.

The caisson is of the box sliding type, weighs 400 tons, is

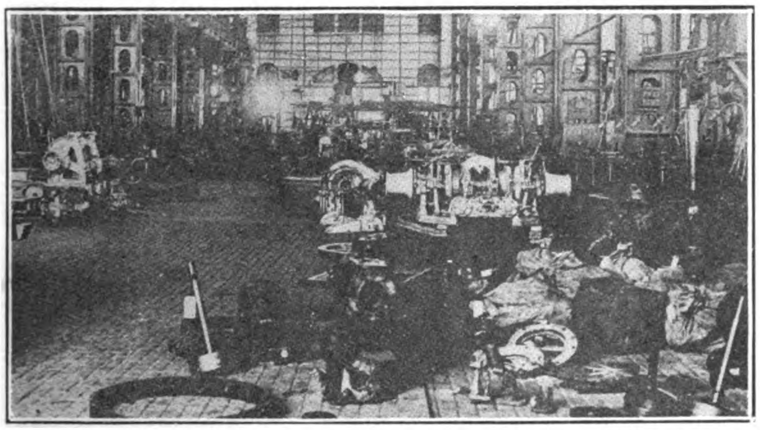
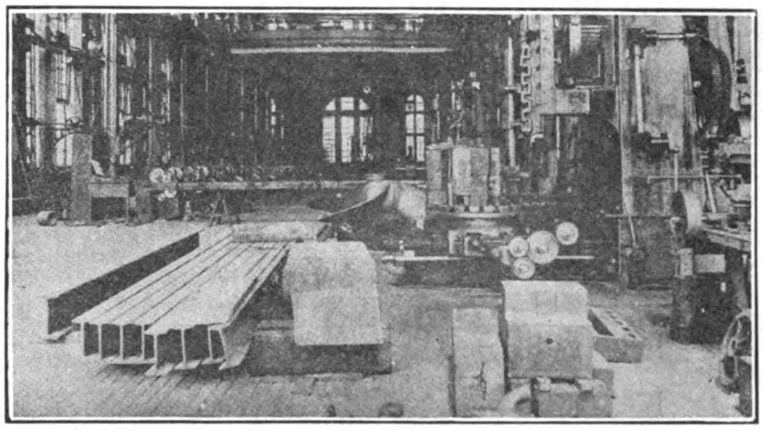
THE HONGKONG AND WHAMPOA DOCK CO., LTD.

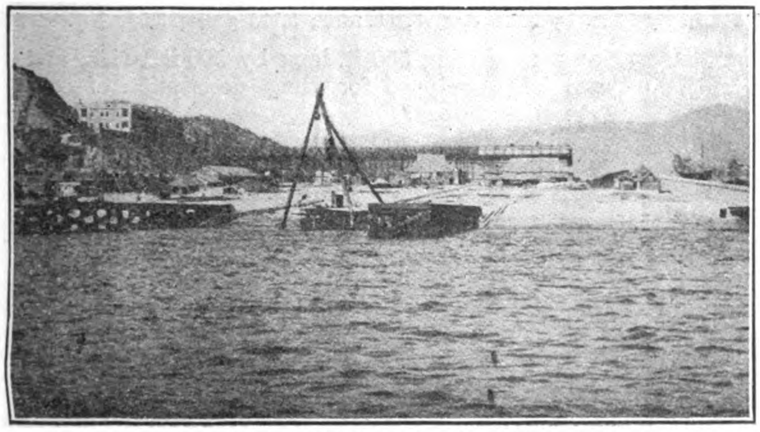
THE PLATE-BENDING SHOPS

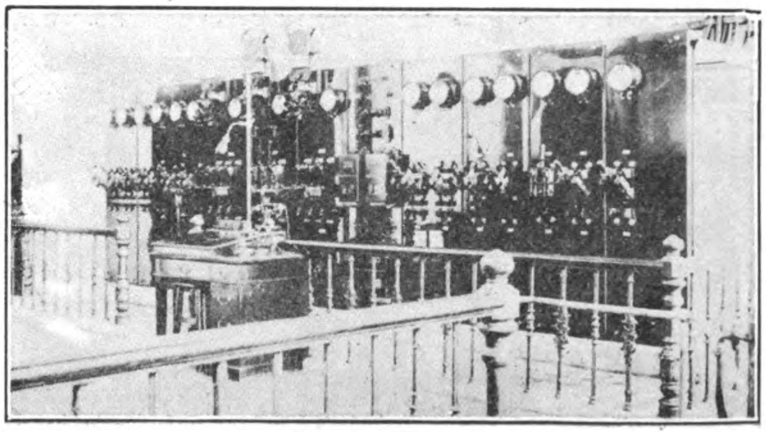
VIEWS OF MACHINE SHOPS

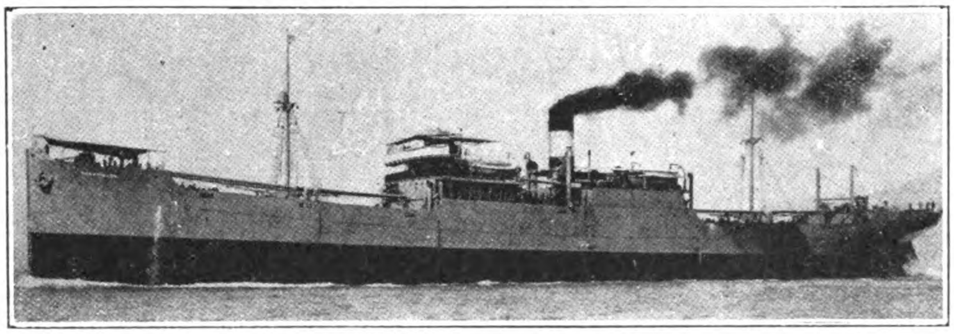
VIEWS OF MACHINE SHOPS



New Shipbuilding Berths



Power House


S.S. "War Trooper," 8,000 tons

electrically driven, and can be hauled across the sill to its chamber in $4\frac{1}{2}$ minutes.

The dock can be filled in 45 minutes, and the pumping plant consists of two powerful centrifugal pumps, which are together capable of pumping out the dock, without any vessel in it, and with 34-ft. 6-in. depth of water on the sill, in less than three hours.

Railway tracks run on both sides of the dock, with travelling cranes up to 20 tons' lifting capacity.

Slipways

No. 1 Slipway—1,030-ft. long by 80-ft. wide, length of cradle 270-ft.—is capable of taking up steamers 325-ft. long, drawing 18-ft., and of 3,000 tons displacement. Such a vessel can be hauled up in about 45 minutes—smaller steamers in proportionately less time.

Draft on keel blocks at H. W. O. S. T., 15-ft. 4-in. forward, 25-ft. 0-in. aft.

Depth of water at entrance 28-ft. 6-in. H. W. O. S. T.

Length of slip above high water, 437-ft. 0-in. on rail level.

Length of slip above low water, 593-ft. 0-in. on rail level.

No. 2 and No. 3 Slipways—Each $993\frac{1}{2}$-ft. long by 60-ft. wfde, length of cradle, 250-ft.—are each capable of taking steamers 300-ft. long, drawing 17-ft. and of 2,000 tons displacement. Such a vessel can be hauled up in 30 minutes.

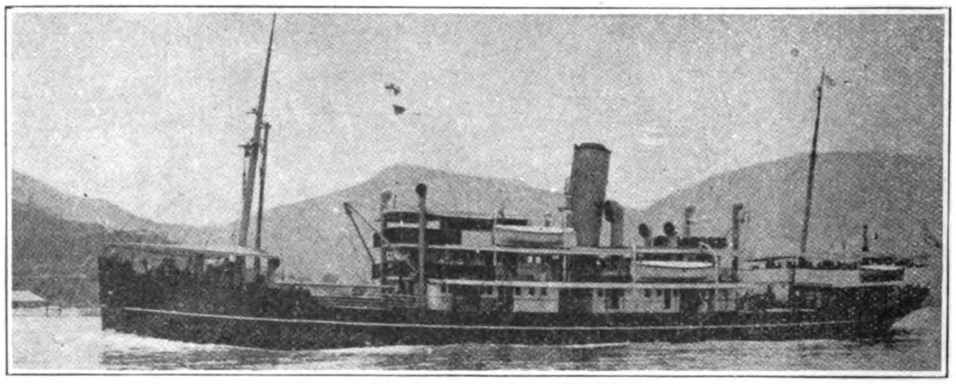
Draft on keel blocks at H. W. O. S. T., 15-ft. 6-in. forward, 24-ft. 0-in. aft.

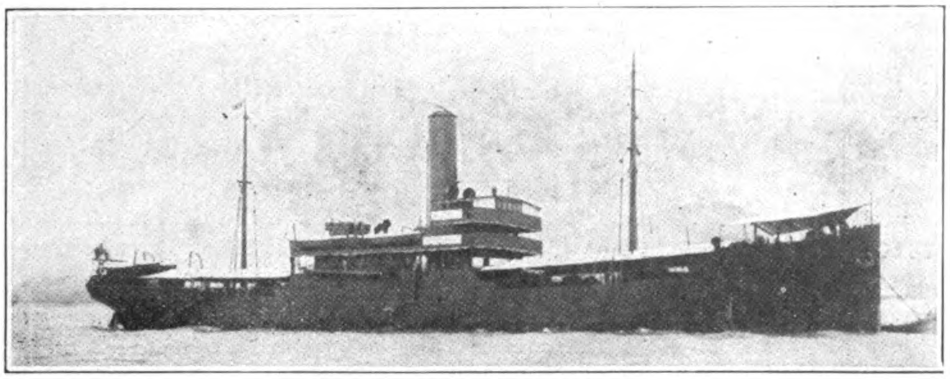
Depth of water at entrance, 27-ft. 6-in. H. W. O. S. T.

Length of slip above high water, 405-ft. 0-in. on rail level.

Length of slip above low water, 561-ft. 0-in. on rail level.

The cradles of all three slipways are of Morton's patent type, with swinging bilge arms, and are hauled by wire cables, which work on drums electrically driven, the hauling gear being operated by two sets of electric motors of 225 B. H. P. each.


S.S. "Valaya," 225-ft. by 35-ft. by 13-ft.

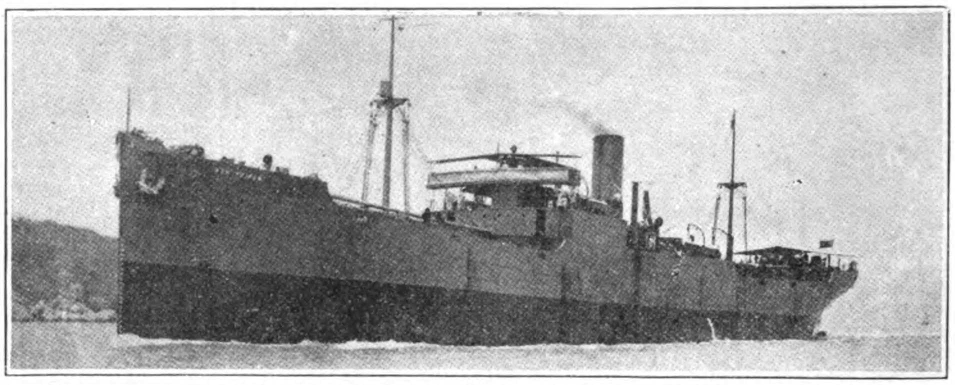

S.S. "Kwai Sang," 290-ft. by 42-ft. by 25-ft.

The cable for the No. 1 slipway is $13\frac{1}{2}$-in. circumference, while the No. 2 and No. 3 slipways cables are each 12-in. circumference.

Steel pierheads give a fair lead to ships entering all three slips.

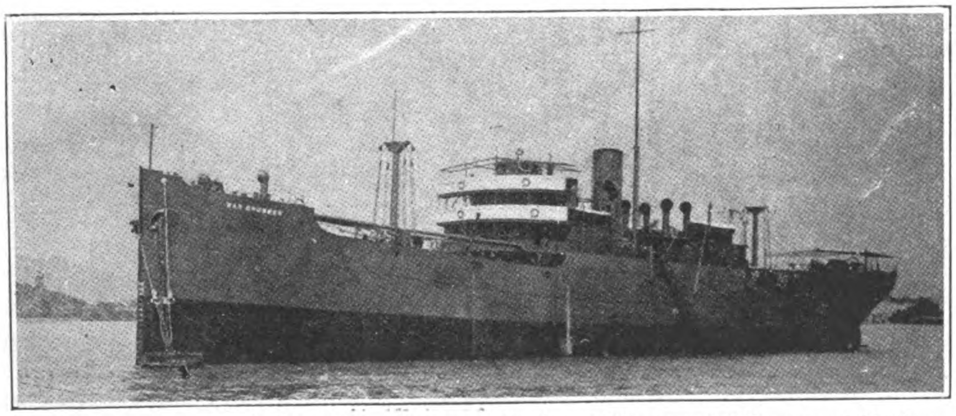
Motive Power.—The motive power for the whole establishment is supplied from a central electric station, the generators being driven by gas engines of the Cockerill-Westgarth type (3,000 collective horse-power) fed by Mond gas supplied from four producers.

Building Yard.—The building slips cover an area measuring 550-ft. long by 500-ft. wide, and are fully equipped for every description of constructional work.


S.S. "War Sniper," 400-ft. by 52-ft. by 31-ft. d.w., 8,200 tons; 5,175 gross; 3,500 h.p.

Conveniently grouped round the building yard are the platers' shops and sheds, moulding lofts, carpenters' and joiners' shops, saw mill, etc.

Main Workshops.—The main workshops, which are equipped with the latest type of machinery and tools for dealing with all classes of work, and are also fitted with electric overhead travelling cranes up to 100 tons capacity, cover over five acres of ground, and comprise boiler shops, erecting shops, heavy and light machine shops, forge and smithies, iron and brass foundries, coppersmiths' shop, etc.


S.S. "War Drummer," 325-ft. by 45-ft. by 26-ft. d.w., 5,080 tons; 3,102 gross; 1,700 h.p.

TYPES OF STEAMERS BUILT AND ENGINED BY THE HONGKONG & WHAMPOA DOCK CO., LTD.

The machine shops and boiler shop are supplied with machines of the heaviest description, capable of turning out work of the largest class. The boiler machinery is capable of dealing with plates 30-ft. long, 13-ft. wide, and up to 2-in. thick. Boiler repairs and any other work of a like nature can be carried out by means of electric welding and oxy-acetylene processes by experienced workmen.

The forge and smithy, in addition to the small power hammers for ordinary smithy purposes, are supplied with a gas forging furnace and an 8,000 tons hydraulic forging press, for work up to 3-ft. in diameter, while the foundry can turn out castings up to about 25 tons.

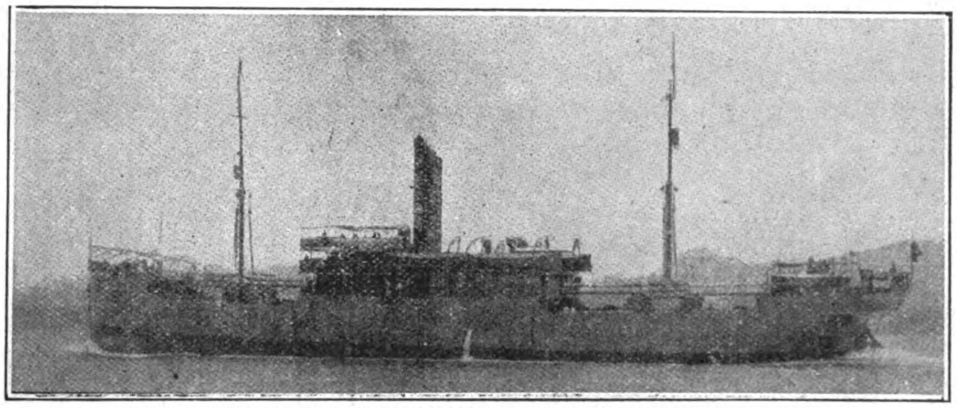
Quay Wall.—The quay wall, built of concrete blocks, is 3,200-ft. long. For the greater part of its length there is 40-ft. depth of water H.W.O.S.T., enabling ships of any size to berth alongside when required at all states of the tide.

Situated at a convenient point on the wall is an electric crane, capable of lifting 100 tons at a 70-ft. radius, and smaller weights at a larger radius. Wagon and crane roads run along the quay, with a 20-ton and other lighter travelling cranes available to deal with loads at any point thereon.

Towage and Launch Services.—Powerful steel tugs attend when required upon all steamers using the yards, and are available for service further afield, by special arrangement. There are also numerous steam launches available for all minor harbor requirements.

The Twin-Screw Salvage Tug "Taikoo" (1,500 I. H. P.) is equipped with powerful fixed steam-driven salvage pumps, also heavy lifting gear suitable for undertaking salvage work of any kind at short notice. The vessel has also a large hold in which all the necessary gear for salvage work can be carried. Portable salvage pumps, boilers, diver's pumps and gear, are always kept ready for immediate despatch.

A European diver, skilled in salvage work, is always available.



S.S. "Prominent," 270-ft. by 40-ft. by 21-ft. 6-in.

The S.S. "Prosper," S S. "Hermeliss" and S.S. "Helikon" were built to similar dimensions.

THE TAIKOO DOCKYARD & ENGINEERING COMPANY OF HONGKONG, LIMITED.

List of Ships and Engines built during 1919.

Name of Vessel.	Type	Board of Trade Gross Tonnage.	I.H.P.	Built for
Laertes	Steel Screw Steamer	5,806	3,500	Messrs. A. Holt & Co.
War Driver	do.	5,201	2,850	British Government
War Miner	do.	5,201	2,850	do.
War Bugler	do.	5,201	2,850	do.
St. Day	Steel Rescue Tug	451	1,200	do.
St. Dogmael	do.	451	1,200	do.
		22,311	14,450	

The Hongkong and Whampoa Dock Co., Ltd.

The dock Company's properties cover 88 acres; there are six granite dry docks, taking vessels up to 700-ft. in length, also two slipways which take vessels up to 2,000 tons; there are a number of shipbuilding ways where during the war eight vessels were under construction at the same time. There is also nearing completion the new extension to the shipbuilding yard where 3 new ways are laid down for the building of vessels up to 750-ft. in length—that is to say they are prepared to build ships much larger than have ever been seen in the port of Hongkong. There is a new dry dock of 1,000-ft. under consideration for building in the near future, and this will accommodate anything likely to come to the East. The engine fitting, machine, boiler, blacksmith, foundry, coppersmith and kindred shops are all fully equipped and capable of dealing with any engineering problem that may be presented—the whole place is lighted and driven electrically—all overhead electric travelling cranes for the quick handling of material. The number of men employed at present is nearly 10,000.

In addition to the building of new ships the Company has dealt with a vast amount of repairing and reconditioning work and has also converted a number of sailing ships into motor-driven oil "Tankers." The new shipbuilding berths are nearing completion and are capable of taking ships up to 750-ft. in length—the sawmill, joinery and other shops are to be situated on the new ground, so that there will be a minimum in handling of material. Cranes of the most approved type will be fitted along the slipways for the expeditious handling of all steel work in connection with ship construction.

THE DIMENSIONS OF DOCKS & SLIPS ARE AS FOLLOWS:

Name of Dock or Slip	Length on Keel Blocks	Entrance Breadth	Depth over Sill at Ordinary Spring Tides	Rise of Tide Springs	Rise of Tide Neaps
KOWLOON					
No. 1 Dock, Kowloon ...	700′	86′ top / 70′ bot'm	30′	7′ 6″	3′
No. 2 Dock, Kowloon ...	371′	74′	18′ 6″	7′ 6″	......
No. 3 Dock, Kowloon ...	264′	49′ 3″	14′	7′ 6″	......
Patent Slip, No. 1, Kowloon	240′	60′	14′	7′ 6″	......
Patent Slip, No. 2, Kowloon	220′	60′	12′	7′ 6″	......
TAI-KOK-TSUI					
Cosmopolitan Dock	466′	85′ 6″	20′	7′ 6″	......
ABERDEEN					
Hope Dock...	430′	84′	23′	7′ 6″	......
Lamont Dock	333′	64′	16′	7′ 6″	......

Other Dockyards

One is not able to say much about the Royal Naval Dockyard but any visitor to the Colony can see that it occupies a large area of ground, in a very prominent position of the city.

There are two other smaller British shipyards and ten owned and managed by Chinese. In 1916 there were actually T.R. vessels built in the Colony practically all of which are propelled by steam or motors. And of these Taikoo firm heads the lists.

There is also an important local industry connected with the building and repairing of launches and motor-boats.

The above facts and figures and the accompanying illustrations will give some indication of the importance of shipping to the Colony of Hongkong and to the reader will help him to understand something of what is meant when one speaks of shipping and shipbuilding being the life blood of the Colony.

Nos. 1 to 11 were all built by the Hongkong and Whampoa Dock Co., Limited.

No. 1. *War Snipper* ... ... 400′ × 52′ × 31′ d.w., 8,200 tons, 5,175 tons gross—3,500 H.P.

No. 2. *War Bomber* ... ... 400′ × 52′ × 31′ d.w., 8,200 tons, 5,175 tons gross—3,500 H.P.

No. 3. *War Drummer* ... ... 325′ × 45′ × 26′ d.w., 5,080 tons, 3,102 tons gross—1,700 H.P.

No. 4. *Chak Sang* ... ... 290′ × 42′ × 25′
No. 5. *Kwai Sang* ... ... 290′ × 42′ × 25′
No. 6. *Prosper* ... ... 270′ × 40′ × 21′ 6″
No. 7. *Prominent* ... ... 270′ × 40′ × 21′ 6″
No. 8. *Hermelin* ... ... 270′ × 40′ × 21′ 6″
No. 9. *Helikon* ... ... 270′ × 40′ × 21′ 6″
No. 11. *Valaya*... ... ... 223′ × 35′ × 6″ 13′

II.—SHANGHAI

SHIPBUILDING in Shanghai during the current year received considerable impetus as a result of orders placed during the war by foreign governments. In the November number of THE FAR EASTERN REVIEW we printed a full description of the work and yards of the New Engineering and Shipbuilding Works, a concern which is rapidly forging ahead and taking its place as one of the premier shipbuilding plants in the Far East. The older established Shanghai Dock and Engineering Company has also been most active and during the year 1920 launched and completed two large standard steamers for the British government and six steel cargo vessels each of 300 tons deadweight capacity for local owners, also one large steel twin-screw passenger and cargo steamer 340 feet by 47 feet beam for the China Merchants' Steam Navigation Company. Work is proceeding on two large passenger and cargo steamers of about 340 feet long, one steel cargo hulk to carry 3,000 tons deadweight and a twin-screw Yangtze gunboat for the Italian government. Several smaller craft were also launched during the year.

We have pleasure in showing the s.s. *Mellon* ex s.s. *War Regalia*, one of the three British standard ships on trial trip, fine examples of the shipbuilding art. She developed close on 14 knots per hour on trial trip.

These ships were sold by the British government to Greek owners and are sure to prove a decided aquisition to that nation's commercial fleet.

A Chinese dockyard under foreign technical direction has launched two large standard steamers for a foreign government and work is proceeding on the other two: they also launched many river and small craft.

The *Shanghai Times*, in comparing the present and future prospects of the port, says there are several points in favor of the Shanghai shipyards, notably the fact that primarily they are all ship repairers and the building section is a sort of auxiliary part and while new building may at times be inclined to slack off, repair work as a rule will be fairly constant more especially with the large number of new ships visiting the port. The local builders have every possible facility with which to construct and complete vessels in their own yards and workshops: engines and boilers and auxiliary machinery are all under the same control and conditions and are arranged to progress with the construction of the vessels themselves, independent of outside conditions. This is a factor of great value and only possessed by very few shipbuilders in other parts of the world.

In summing up the present position and future prospects, Shanghai's two commercial shipbuilders have reason to feel satisfied with themselves—when labor in other countries and cost and speed of construction revert to pre-war records, then building locally will be subject to very severe competition and under many handicaps but with present conditions in England and America and prospects of little improvement in the near future, China with her tremendous labor facilities is bound to come to the front and none are better able to make the most of this opportunity than the shipbuilding and engineering yards in Shanghai.

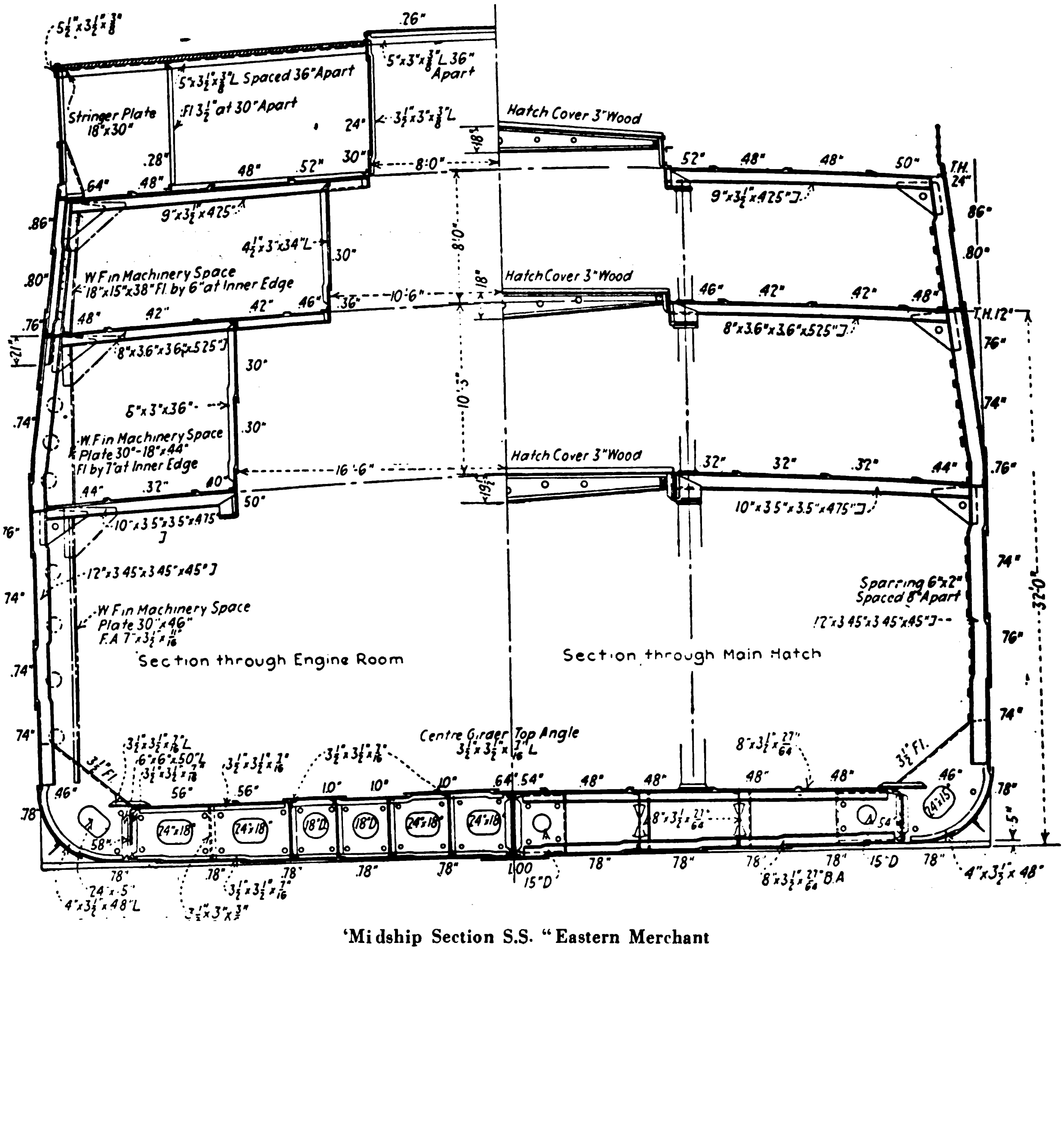
III.—JAPAN

The 13,000-ton Freighter "Eastern Merchant" Built by the Asano Shipyard for the United States Shipping Board

By C. Ano, Director, Asano Shipbuilding Co.

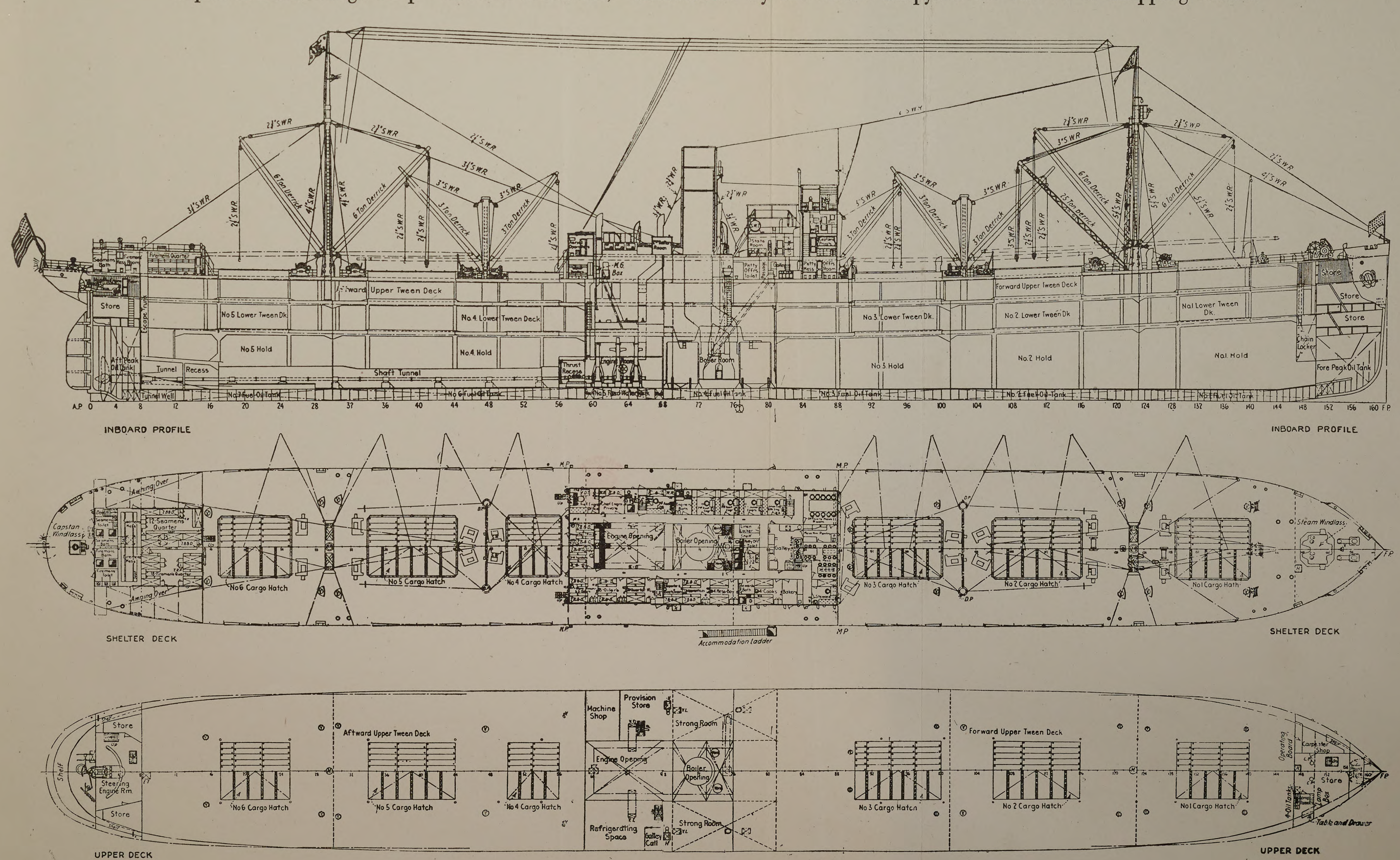
DURING the late war, Japanese shipbuilders suffering from a lack of steel materials negotiated with the United States government to built cargo steamers for them and to get steel in return. As a result of these negotiations two series of contracts were arranged between the United States Shipping Board and representatives of the Japanese shipbuilders.

The first series of contracts, which were signed during April, 1918, provided for the sale of twelve steamers of 100,800 tons deadweight by the Japanese shipbuilders at the rate of $225 to $275 per deadweight ton and for the release for export of 100,800 tons of steel already ordered by the Japanese shipbuilders from the various steel mills in the United States. The shipbuilders concerned in these contracts were the Asano Shipbuilding Company, Kawasaki Shipbuilding Company, Osaka Iron Works, Suzuki



'Midship Section S.S. "Eastern Merchant

Japanese-Built Cargo Ship "Eastern Merchant," Constructed by the Asano Shipyard for the U. S. Shipping Board.



–Profile and Deck Plans

Company and Uraga Dock Company. Most of the ships under these contracts were, at the time of signing the contracts, ready for sea or in an advanced state of building, and contributed great assistance to the Allies in carrying war materials across the Atlantic. Later on three steamers having a total deadweight capacity of 27,000 tons were added to this series of contracts by the Kawasaki Shipbuilding Company.

The second series of contracts were signed in May, 1918, and their principal terms provided that the Japanese shipbuilders were to build and supply the ships to the United States government at the rate of $175 per deadweight ton and that the United States government was to supply the builders with half as many tons of steel material as the deadweight tonnage of the ships they supplied.

Following is the complete list of the shipbuilders and number and tonnage of the ships they are building under these contracts:

Builders	Number of Ships	Deadweight Tonnage of Each Ship	Total Deadweight Tonnage
Asahi Shipbuilding Company	1	5,500	5,500
Asano Shipbuilding Company	2	13,000	26,000
Fujinagata Shipyard	1	6,300	6,300
Ishikajima Shipbuilding and Engineering Works	2	5,000	10,000
Kawasaki Shipbuilding Company ...	5	9,000	45,000
Mitsubishi Shipbuilding Company ...	2	8,400	16,800
Mitsui Company (Uno Shipyard) ...	2	9,100	18,200
Nitta Steamship Company	1	5,500	5,500
Osaka Iron Works	4	10,500	42,000
Suzuki Company (Harima yard) ...	1	5,000	15,500
Suzuki Company (Harima yard) ...	1	10,500	
Uchida Shipbuilding Company	2	8,500	17,000
Uraga Dock Company	3	6,650	19,950
Yokohama Dock Company	3	6,300	18,900

General Arrangement

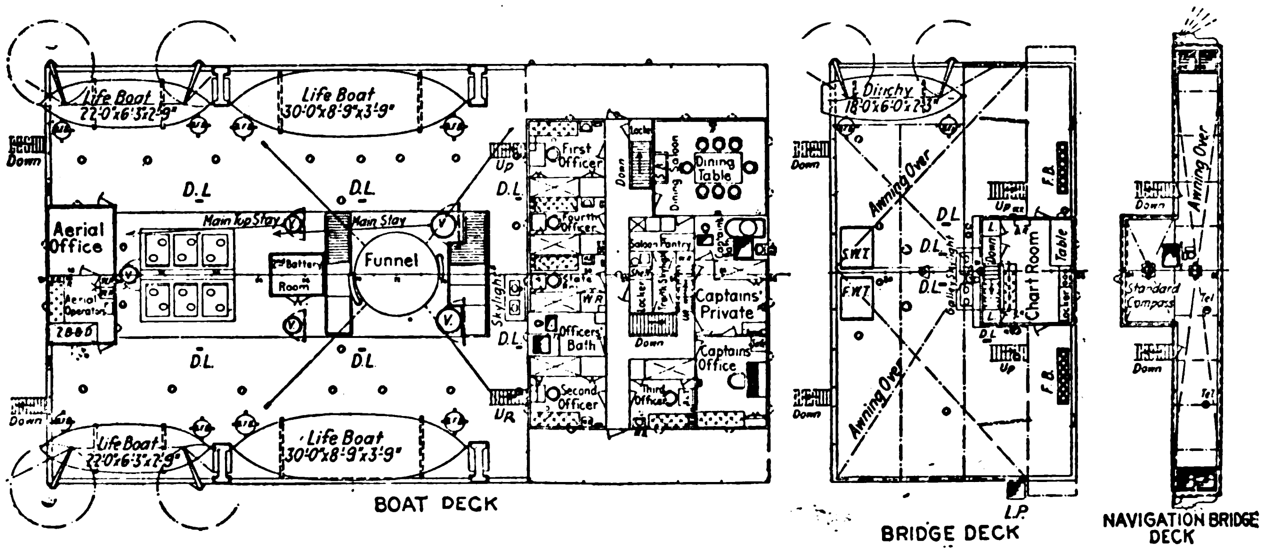
The general arrangement is shown in the accompanying plans, from which it will be seen that the steamer is of the shelter deck type with three continuous decks, which are of steel throughout. Above the shelter deck there are steel deck houses to accommodate the officers and crew, the top of the midship house being extended to form a boat deck. There are seven steel water-tight bulkheads, four of which extend to the shelter deck, and the others to the upper deck. A cellular double bottom extends the full length of the ship between the peak bulkheads, all of which will be used for the stowage of fuel oil, except the part under the engines, in which reserve feed water will be carried. The fore and aft peak tanks are also arranged for fuel oil. The total capacity of the fuel oil tanks, including the large settling tanks, is 1,768 tons, which will give the ship a steaming radius of about 11,000 miles.

Framing

The vessel is framed transversely, the frame spacing being generally 36 inches, reduced to 27 inches in No. 1 hold and to 24 inches in the peaks. Plate floors in the double bottoms are arranged on alternate frames, the intermediate floors being of bulb angle section, supported by flanged bracket plates. Widely spaced pillars of tubular section are arranged in the holds and 'tween decks, thus providing clear spacious holds for the storage of cargo. No side stringers are fitted except in the forward portion.

Accommodations

Accommodation for the officers and engineers is as shown on the illustration. The house on the boat deck is allotted exclusively for deck officers, the port side of the 'midship house for engineers,



Plans of Boat and Bridge Decks, S.S. "Eastern Merchant"

the starboard side for the steward and petty officers, and the after deck house for the exclusive use of the seamen and firemen, each quarter having a spacious and well equipped mess room. The saloon, captain's and chief engineer's cabins have been given special attention, the rooms being very tastefully finished in Japanese oak and pine. All officers' and crew's rooms are spacious, well ventilated and lighted and have been arranged to suit the special requirements of the American owners.

In spite of the great effort of the United States government in arranging for quick delivery from the steel mills, none of the keels of the ships could be laid before the armistice. Among those ships the two Asano steamers are considered fine specimens of Japanese naval architecture, being the largest and only twin-screw vessels built in Japan for the United States government. The description of the first ship, *Eastern Merchant*, given herein will be sufficient to give a general idea of both ships.

Principal Dimensions

The principal particulars of the *Eastern Merchant* are as follows:

Length overall	461 feet 7 inches
Length between perpendiculars ...	445 feet 0 inches
Breadth, moulded	58 feet 0 inches
Depth, molded to shelter deck... ...	40 feet 1 inch
Load draft	30 feet 4 inches
Gross tonnage	8,194 tons
Net tonnage...	4,988 tons
Deadweight capacity	13,000 tons
Capacity for bale cargo at 40 cubic feet	14,000 tons

Cargo Handling Arrangements

The loading and discharging arrangements are of a very efficient character. Eighteen wooden derricks and and heavy steel derrick are provided to load and discharge cargo through six large hatchways, with the aid of 7-inch by 12-inch double geared horizontal steam winches. As will be seen in the accompanying plan, the two steam winches forward of No. 2 hatch are arranged for heavy lifts to work on a large lifting drum placed on the ship's centreline, through forged steel clutches, and with the topping arrangement leading to a similar drum connected to the No. 1 winches. This arrangement enables a quick and safe working of cargoes of large weights.

Anchor Handling

There is a powerful spur geared anchor windlass and a capstan engine aft for anchoring and mooring purposes. The bower anchors are of the Ohshima patent stockless pattern and are stowed in the hawse pipes.

Steering Gear

The steam steering engine is of Brown's patent steam tiller type actuated from the bridge through telemotor gears. An electrical rudder head telltale is provided so that any disturbance in the telemotor system can be readily noticed by the officer on watch. The ship has been arranged for the installation of wireless apparatus, but this has not been fitted by the shipbuilders.

Propelling Machinery

The propelling machinery of the ship consists of two sets of triple-expansion engines, constructed by the Kubota Iron Works of Osaka. The particulars of each main engine are as follows:

Diameter of high pressure cylinder	22 ins.
Diameter of intermediate pressure cylinder ...	36½ ins.
Diameter of low pressure cylinder	61 ins.
Stroke	48 ins.

There are two main condensers, each having a cooling surface of 2,700 square feet. Each of the propellers has four detachable manganese bronze blades with a cast iron boss. The diameter and pitch of the propellers is 16 feet and 18 feet respectively.

Steam is generated by four single ended return tube boilers working under Howden's system of forced draught. The particulars of the boilers are as follows:

Diameter	14 feet 3 inches
Length	11 feet 6 inches
Working pressure	200 pounds per square inch
Grate area... ...	58.2 square feet
Heating surface...	2,458.8 square ft.

The engine and boiler room auxiliaries include the following:—

Auxiliary condenser: One, of 600 square feet cooling surface.

Circulating pumps: Two sets, centrifugal type.

Independent feed pumps: One pair, size 10½ inches by 8 inches by 24 inches.

Independent bilge pump: One, size 6½ inches by 6½ inches by 6 inches.

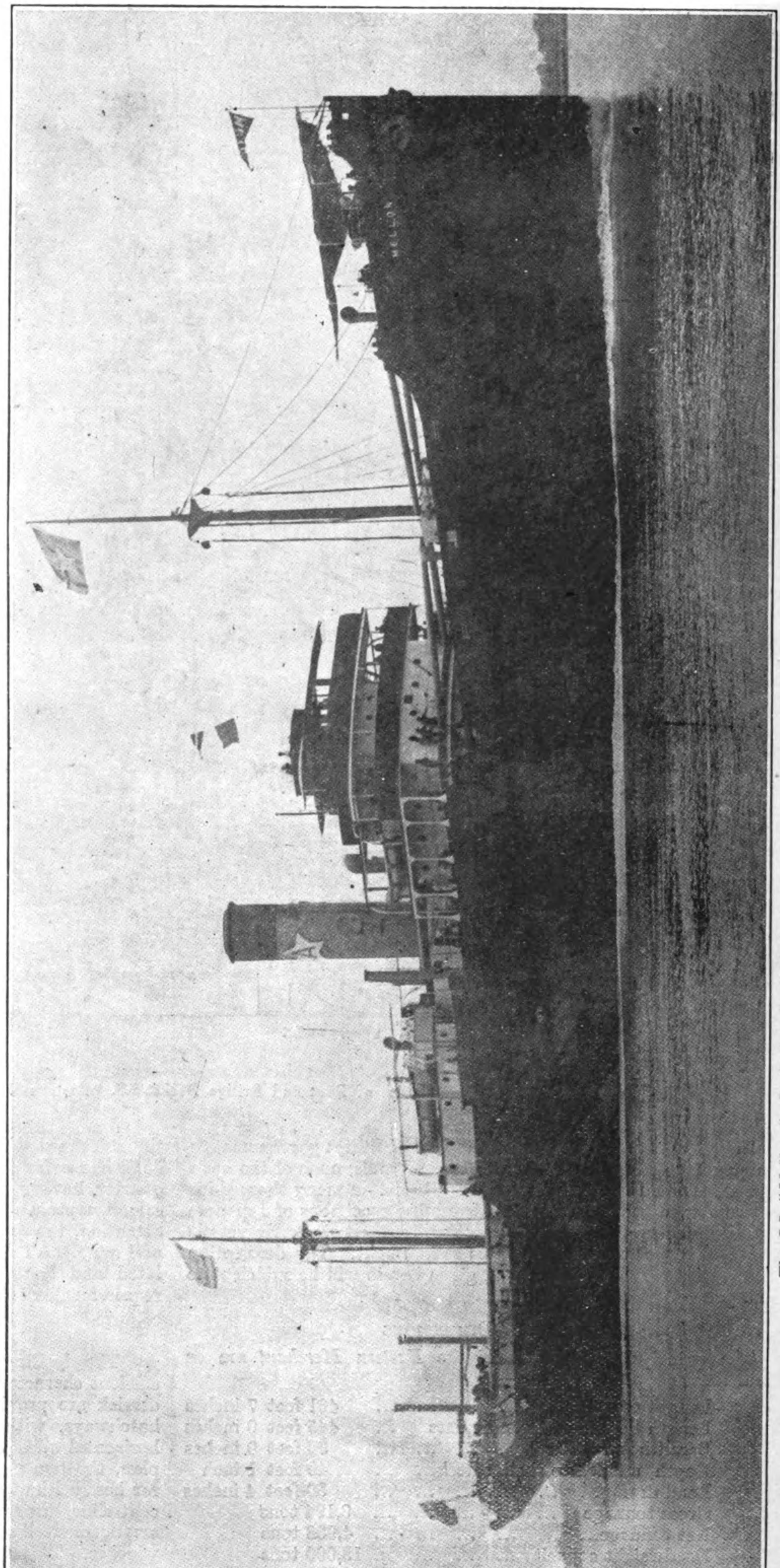
Ballast pump: One, size 9 inches by 12 inches by 10 inches.

General service pump: One, size 10 inches by 6 inches by 10 inches.

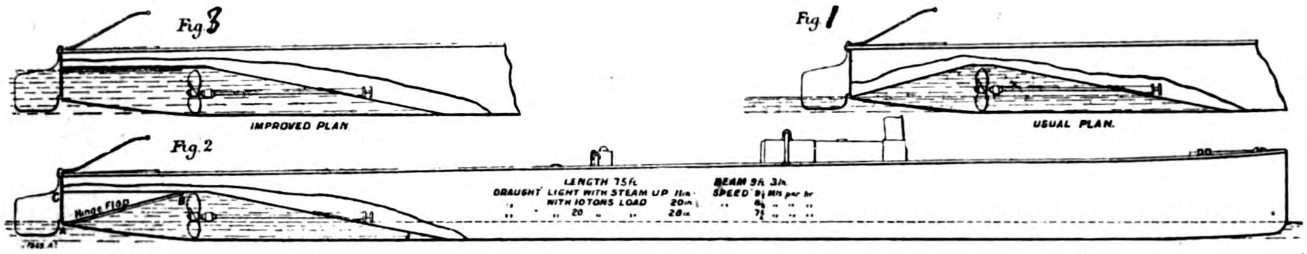
Oil shifting pump: One, size 10 inches by 7 inches by 10 inches.

In addition, there is a 20-ton evaporator, an ash hoisting engine, a feed water heater, etc.

The ship is lighted throughout by electricity. Two dynamos, one of 25 kilowatts capacity and one of ten kilowatts capacity, are placed in the engine room for this purpose. Space for cold storage and ice machines was provided, but these



The S.S. "Mellon"—Built for the British Government by the Shanghai Dock and Engineering Co.—On her Trial Trip



are to be installed in the United States after the vessel is delivered.

TRIALS

The steam trials of the *Eastern Merchant* and her sister ship *Eastern Trader* were very successful and satisfied both the owners and the shipbuilders. On the light load steam trial the *Eastern Merchant* attained a mean speed on double runs of 15.46 knots, while the *Eastern Trader* made 16.15 knots. Afterward the former ship easily made a mean of 12.7 knots on a six hours' continuous run with a total deadweight of over 11,000 tons on board, every part of the machinery being kept in normal working condition. Thus these ships proved themselves not only the largest but the fastest among the ships built in Japan for the United States government.

The keel of the *Eastern Merchant* was laid on April 21, 1919, and that of the *Eastern Trader* on May 1, 1919. Both ships had several alterations during the construction, and were launched on October 6 and November 4 respectively. Both ships had steam trials during December of the same year and were handed over to the United States government early in February, 1920, at San Francisco.

IV.—NAVIGATING THE UPPER YANGTZE

"Knockdown" Steamers

OF the many problems which face the shipbuilder who specialises in the design of shallow draft river steamers, it is probable that the navigation of the Yangtze between Ichang and Chungking was one of the most difficult to solve. The conditions at the rapids vary in an extraordinary way, the rise of water at certain seasons being phenomenal and probably unknown in any other part of the world. The severe conditions demand a vessel which can be run at light draft, at high speed, which is easily handled, is economical to steam, and yet is capable of carrying a considerable amount of cargo and a large number of passengers.

Before 1913 H. M. gunboat *Widgeon* and sister vessels, built on the Yarrow system had made this passage under their own power without resorting to warping with a hawser from the shore.

Details of the "Shu-hun"

In 1913 the twin-screw steamer *Shu-hun*, now so well-known on the upper reaches of the Yangtze, was designed by Messrs. Yarrow & Company of Glasgow, in co-operation with Captin Plant who has the most intimate knowledge of conditions on the Yangtze and of what was required in order to successfully navigate that difficult river.

Based on the successful *Widgeon* type of vessel Messrs. Yarrow & Co. were able to evolve a design and to produce the *Shu-hun* embodying the latest system of propulsion for shallow draft vessels, that is, by propellers working in tunnels sealed at the aft end by the Yarrow patent automatic flap. The most remarkable feature of this vessel is the large diameter of the propellers capable of utilizing the high power of her machinery, in spite of the shallow draft at which she has to run.

Figure (1) shows the tunnel as originally constructed in vessels of this type which are designed for shallow draft. When this vessel was more heavily laden it is clear that the fixed sloping after part of the tunnel would cause a great loss of efficiency. The improved plan similar to that fitted on the *Shu-hun* is shown in Figure (2) where the hinged flap is clearly seen in position AB. With this improved arrangement when the vessel is more heavily laden the flap automatically rises to the position CB, Figure (2) or as shown in Figure (3), and the efficiency of propulsion is thereby greatly increased. For the sake of clearness, Figures (1), (2) and (3) illustrate only a small launch, but the principle is the same as on the *Shu-hun*.

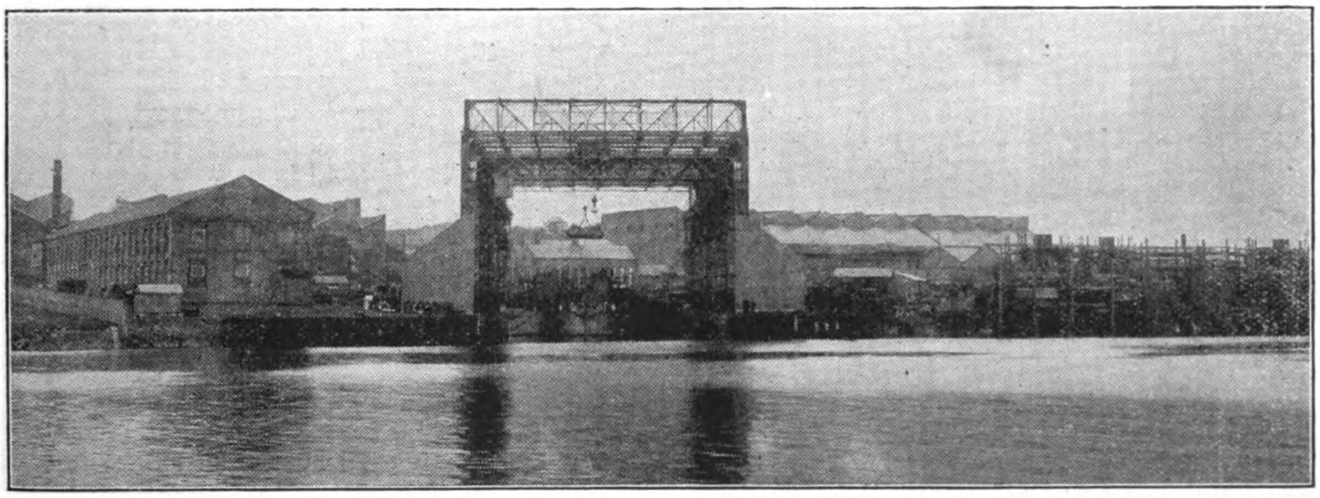
There is no doubt that the great success of the *Shu-hun* is due to the adoption of the Yarrow flap system and also to the special machinery and boilers with which she is fitted. This consists of two sets of triple-expansion engines of Yarrow & Co.'s standard high-speed design, steam being derived from two Yarrow watertube double ended boilers, this type of boiler being capable of that flexibility which is required in the service for which the *Shu-hun* is used.

It may be of interest to give the leading dimensions of this steamer which are as follows:—

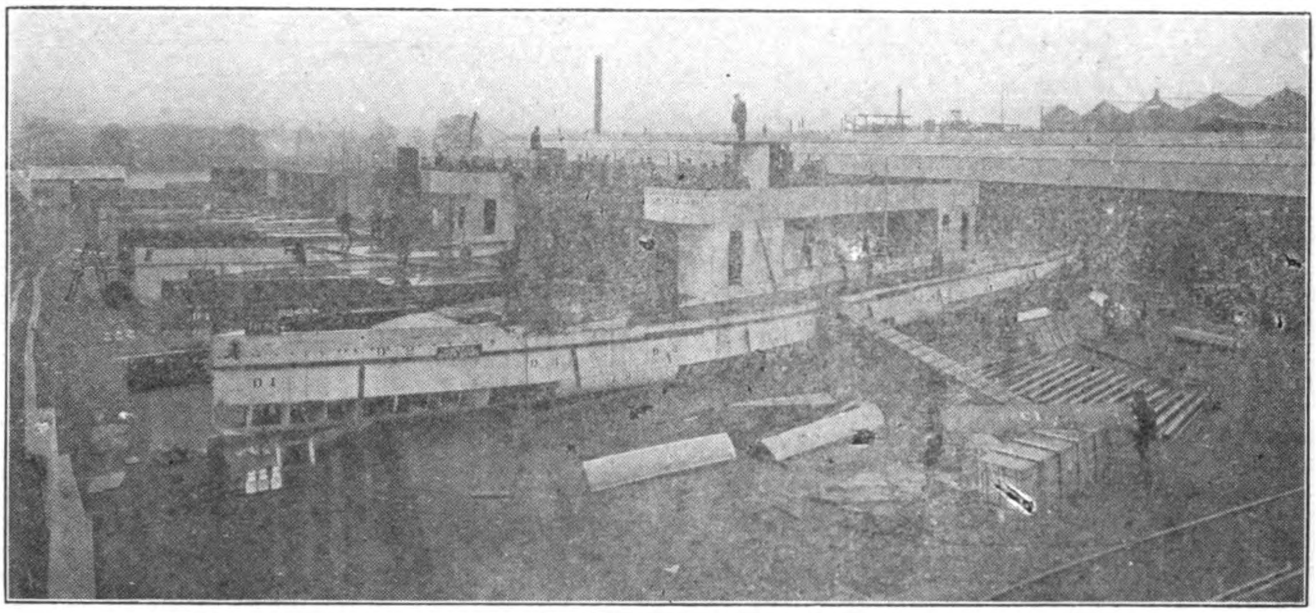
Length overall	190 feet
Beam	30 feet
Depth moulded	9 feet

The accommodation for passengers is very extensive and elaborately fitted up. In addition to passengers 300 tons of cargo can be carried on a draft of about 5 feet.

The success of the *Shu-hun* came fully up to Captain



General View of Messrs. Yarrow & Co.'s Works



Shallow Draft Vessels being Built in Glasgow

Plant's expectations, and she has earned a small fortune for her owners.

As the result of the experience gained with the *Shu-hun*, Yarrow & Co. have been able to make several improvements and these are being embodied in later vessels of the type which are at present being built at their shipyard on the Clyde, and which will in due course make their appearance on the Yangtze.

Unique Portable Steamers

A very different problem in river navigation presented itself many years ago when H. M. Stanley, the great African explorer, was preparing to make his historic expedition up the Congo into the then unknown regions of Africa. In that case it was known that in the upper reaches of the river there existed numerous cataracts and falls which it was impossible to navigate with any type or size of boat. The builders of the *Shu-hun*, met this problem by designing and constructing the stern-wheel steamer *Le Stanley*, which while being of sufficiently shallow draft to navigate most parts of the river was powerful enough to steam at good speed against the stream with the members of the expedition, and a large supply of stores on board. This vessel was constructed in separate sections bolted together, each section being provided with wheels. On reaching a cataract each section of the vessel, supported on its wheels, was pulled on to the bank, and hauled by natives the short distance to the next navigable reach of the river, where they were easily reassembled and the voyage continued.

Steamer Carried Over Andes

Another interesting problem which this enterprising firm had to solve was the supplying of a shallow draft steamer to navigate on a shallow lake situated many thousand feet above the sea level, which was connected to the outside world by a precipitious track up which the carting of heavy loads would have been impossible. The vessel was put together in the builders' yard in England, and then taken into such small pieces that each piece could be carried on men's backs. These small packages were taken over the mountains, the Andes, put together on the shores of the lake and the vessel was soon successfully operating on this inaccessible expanse of water.

Usefulness in the War

Large numbers of vessels have been made by Yarrow & Co. on the system described above. The illustration given in our advertisement appearing in this issue, shows the small *Tigris* gunboats of which sixteen were built during the war, and which were very largely instrumental in the capture of Baghdad. The large *Tigris* gunboats were also designed by Yarrow & Co. Both sizes of gunboats were equipped with the firm's special type of machinery and boilers.

The Up-to-Date Works

The well equipped and up-to-date works of Yarrow & Co. are situated at Glasgow, and a general view taken from the south bank of the river is illustrated on page 11. It will be noted that the fitting-out wet basin is covered in with glass both at the sides and overhead. In the background will be seen the substantial engine and boiler shops which are specially equipped to construct machinery of the type fitted on the *Shu-hun*.

Our last illustration shows a number of shallow draft vessels being put together in the shipyard at Glasgow.

NEW JAPANESE STEAMERS.—Six steamers, with a combined tonnage of 19,900 tons, were launched at different dockyards during last October. The total number of newly built steamers each of over 1,000 tons since the beginning of the present year has reached seventy-seven with a combined tonnage aggregating 374,705 tons. The names and capacity of those new steamers launched during October are as follow:

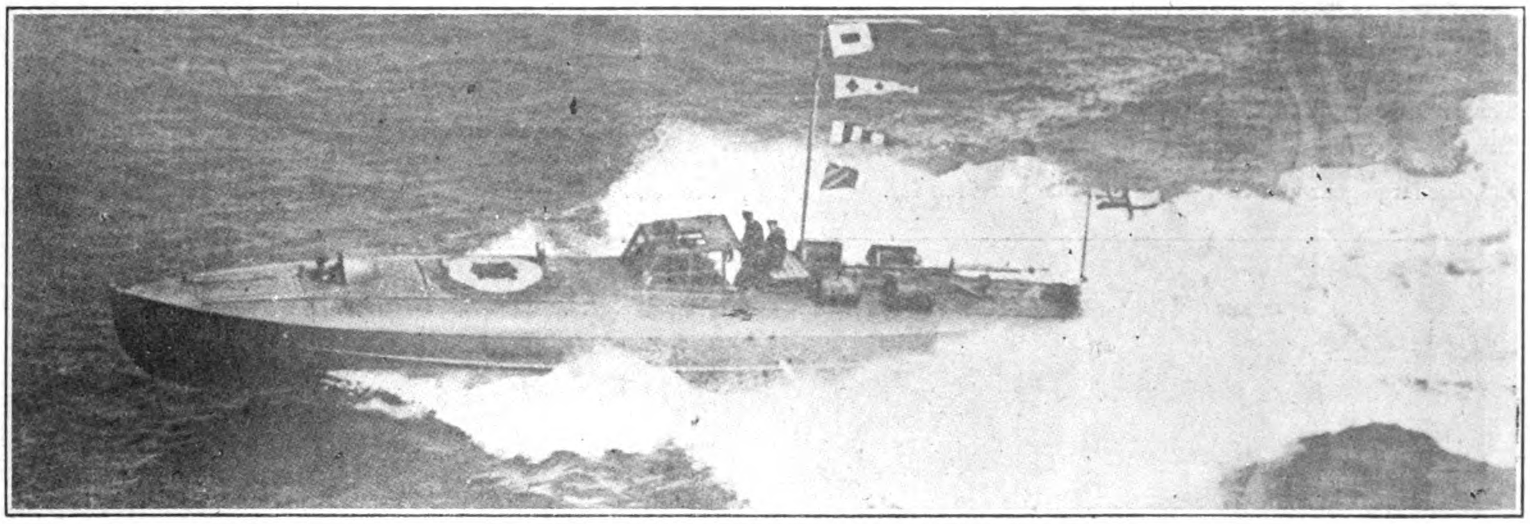
Names	Tonnage	Built at	To the Order of
Kyozan Maru ...	2,500 tons	Urga dockyard	Nisshin S.S. Co.
Kochi Maru ...	3,000 ,,	Harima dockyard	
Hamburg Maru...	5,700 ,,	Uchida dockyard	Uchida S.S.Co.
Kishu Maru ...	2,600 ,,	Osaka iron works	O.S.K.
Eikoku Maru ...	4,500 ,,	,, ,,	Chosen Y.K.
Fusan Maru ...	1,600 ,,	,, ,,	N.K.K.
Total... ...	19,900		

SHIPYARD FOR VLADIVOSTOK.—The Albom and Shostead Company have applied for permission to build a ship-building yard in Diomyd Bay near Vladivostok. Swedish capital will finance the enterprise. The company will undertake the building of ships of medium size. Work will be taken in hand about a year from now, after one of the Company's members has returned from a trip to Sweden.

JAPAN'S FIRST ELECTRIC STEAMER.—The first electrically propelled steamer in Japan was launched on December 24 at the Asano Shipbuilding Yard at Tsurumi. The steamer, *Biyo Maru*, was ordered by the Toyo Kisen Kaisha, and is 8,800 tons. She is four hundred feet long and fifty-three feet wide. The electric motor develops three thousand horse-power, and the speed will be 15 knots.

Thornycroft Coastal Motor Boats

(C.M.Bs.)



A THORNYCROFT TERROR IN THE NORTH SEA
One of the 55-foot Thornycroft Coastal Motor Torpedo Boats fitted with Y. 12,350 h.p. Motors, Speed 45 to 50 knots.

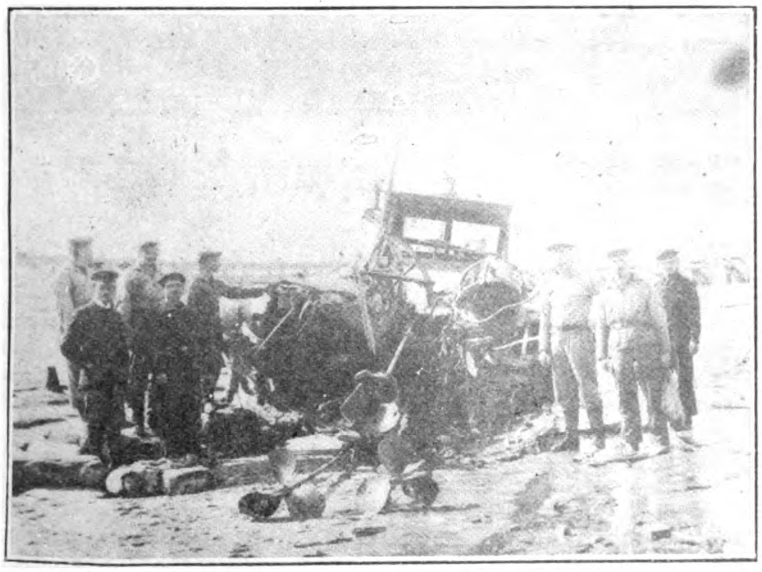
CONSIDERABLE publicity has been given to the operations of the American submarine boat chasers and motor launches during the war, but the activities of the purely British C.M.Bs. have been kept very secret, their existence being known only to very few outside the British Navy.

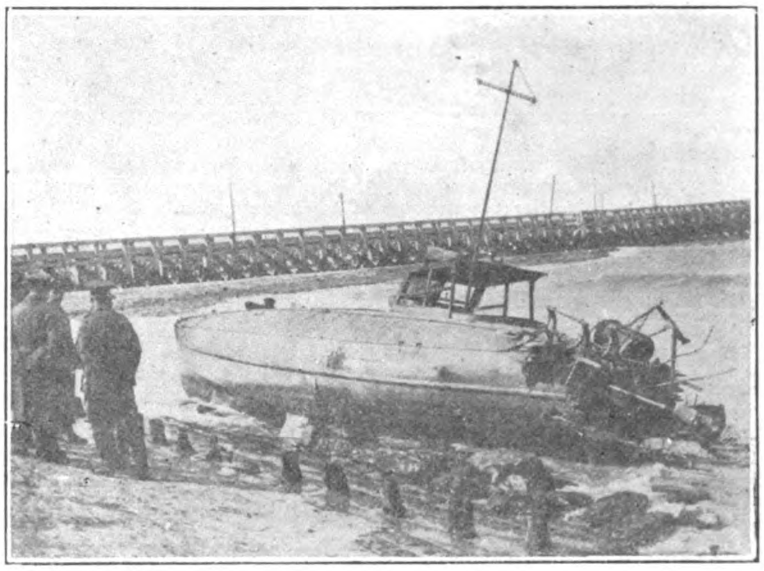
Small high-speed craft in the early days of the modern Navy were looked upon as the right type of vessel to fight with the Whitehead torpedo, but, during the thirty years or so preceding the war, the torpedo boats grew and grew in size until they were really small cruisers, and the fighting which has taken place during the war (except in the case of the Jutland Battle and one or two other instances) showed that their work would mainly be done with their guns.

The very extensive use of mines made it extremely difficult for submarines and boats of considerable draft to approach the enemy bases, with the result that the smallest possible vessel with a great speed was again the obvious means of carrying the Whitehead torpedo to attack the enemy.

The first torpedo boat in the British Navy, built in the early 'seventies, was a Thornycroft boat, and large numbers of similar small craft were built for all parts of the world. With the development of the internal combustion motor, this firm designed and built a 40-ft. motor torpedo boat for the Russian government during the Russo-Japanese War. During the ten years or so before the war a special form of hull was developed which was the outcome of many years' experiment by Sir John I. Thornycroft, F.R.S., and Mr. Tom Thornycroft. This hull would not only skim on the surface of the water when driven at high speed, but also had good sea-going qualities.

In the early summer of 1915 designs were prepared showing





THE "LITTLE FELLOW" THAT STAYED IN OSTEND

Two C.M.Bs. entered Zeebrugge Harbor in the early stages of the operation to torpedo a vessel alongside the Mole, while others were fitted with trench mortars to throw bombs over the Mole on to the aeroplane sheds. In the second action at Ostend when the *Vindictive* was placed in position, two C.M.Bs. were told off to torpedo the ends of the piers to put the guns on them out of action. While others made the smoke screen, one of them went in ahead of the *Vindictive* burning flares to indicate the exact position of the entrance. In all these perilous exploits, only one of the "little fellows" remained behind, struck by a direct hit from the batteries at Ostend, and washed ashore where it was taken to Germany for study and "dissection."

this type of boat fitted up for carrying a torpedo in a dropping gear, and submitted to the Admiralty. Shortly afterwards three young officers from the Harwich Force proposed to Thornycrofts to build the smallest possible boat which could carry a torpedo. The weight of the boat complete with this torpedo was not to exceed that of the ordinary 30-ft. motor boats, carried in davits of the light cruisers. A speed of not lees than 30 knots was considered necessary to give the boats any chance of success, and fuel for a considerable radius of action was imperative.

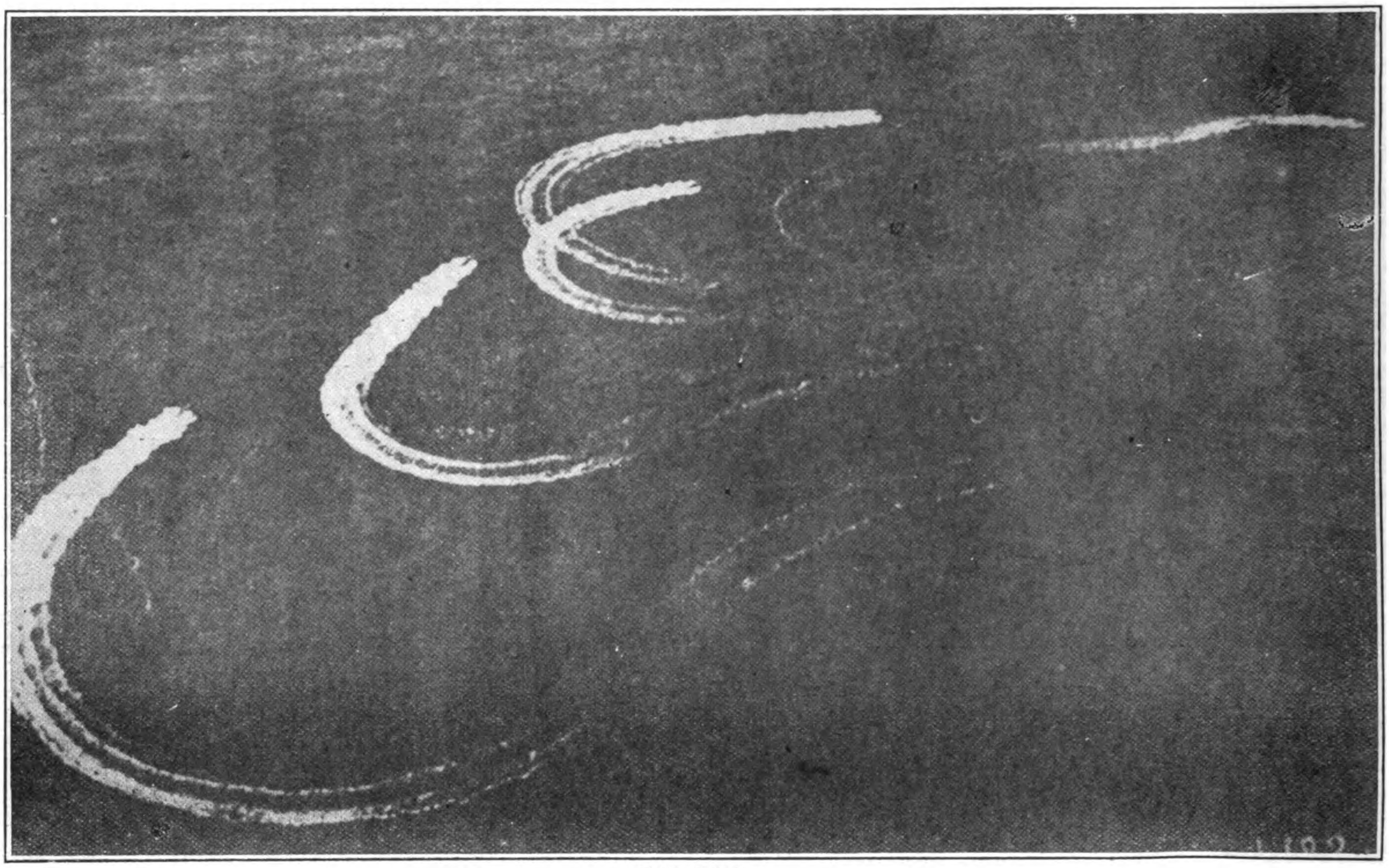
At first sight the conditions seemed very difficult to fulfil, as the high-speed racing boats which had been built had never carried any greater load than the crew, and fuel for a short race. They had never been designed with the necessary lifting gear and stiffening to enable them to be slung in davits with a heavy load.

The torpedo itself amounting to about three-quarters of a ton, the discharge gear and fuel also had to be provided for.

be capable of being discharged as the boat advanced to the attack at high speed.

It was found comparatively easy to arrange a satisfactory means of carrying the torpedo and discharging it over the stern, but this would have necessitated turning for the attack to be made, and it was thought that the chances of success, if this had to be done, would be greatly reduced. Eventually, the happy idea of discharging the torpedo over the stern tail first occurred, it being thought that if the boat were going at about the same speed as the torpedo there would be a good chance of eer being steered clear of the torpedo's track after it had been discharged. It was felt that the success of such a scheme could only be determined by trial, and so an experimental boat was got ready as quickly as possible.

The only boat which was available for experiment was not a very fast one, but, from the trials which were carried out towards the end of the year, the torpedo specialists from the *Vernon*



THE KILL

This remarkable photograph taken from an aeroplane discloses a "Pack" of British C.M.Bs. that have hounded down their German submarine quarry in the North Sea and dropped their depth bombs. They are seen "Beating It" at top speed and in perfect formation to get outside the danger zone before the explosion.

From the data available concerning boats of the type and from model experiments it was decided the conditions could be met, but the best way of carrying and discharging the torpedo was considered uncertain.

The earliest torpedo boats carried their torpedoes in a dropping gear which has remained a service fitting in picket boats up to the present war; but the dropping gear had never been employed for anything larger than a 14-in. torpedo and necessitated the boat being brought to a very slow speed before the torpedo could be released. In some of the early boats built for the British Navy the torpedoes were carried in a shoot or trough in the bow and discharged by being pushed out by a ram, but the bow discharge had been abandoned for many years as a bad arrangement.

The idea of the officers who were urging the scheme, and who had volunteered to take charge of the boats themselves if they could be obtained, had for their sole object *attack* and not defence, so it seemed imperative that the torpedo should somehow

decided that there was every chance of it proving successful with a boat having a speed of over 30 knots.

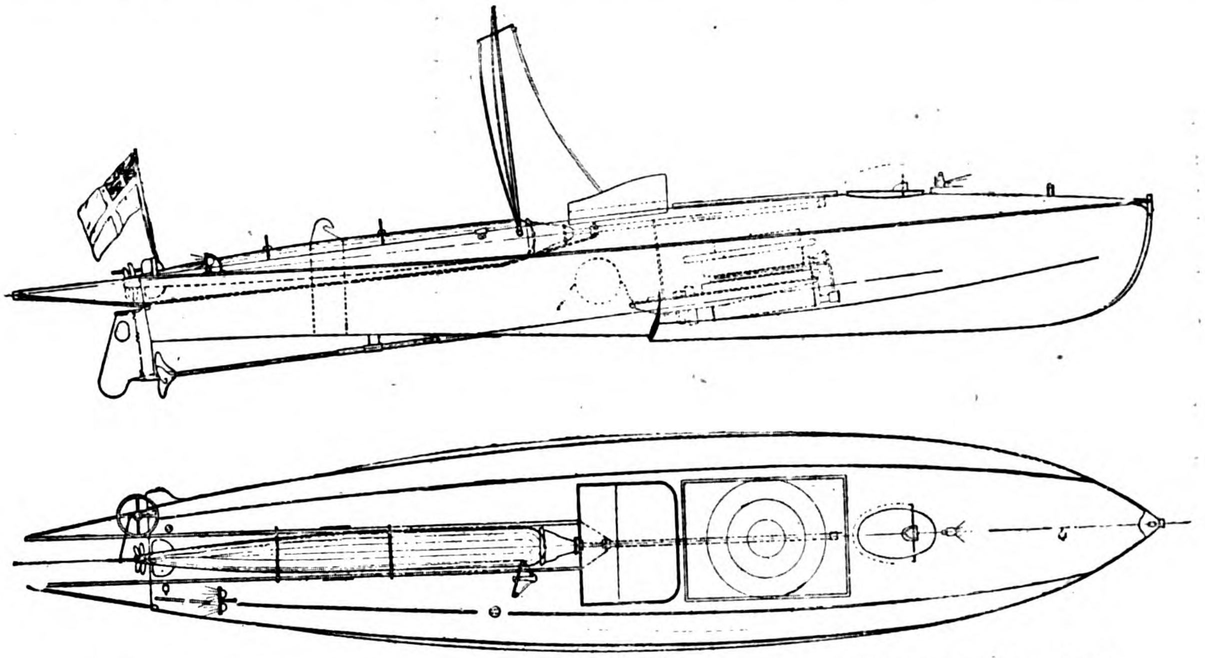
In the meantime, detailed designs of the boat had been prepared, and in January, 1916, after their approval by the Director of Naval Construction, Sir E. H. Tennys n d'Eyncourt, C.B., and the Engineer-in-Chief, the First Sea Lord and Sir Henry Jackson decided that twelve boats should be built.

Thornycrofts were instructed that the greatest possible secrecy was to be maintained, it being considered that successful operations with them would greatly depend on the enemy being ignorant ef their existence. Arrangements were made to build the boats on an island in the Thames, a certain number of skilled workmen from the dockyards being loaned to assist in the work. As no motors existed which were suitable, new designs were prepared and the motors put in hand at Thornycroft's Basingstoke Works, where the torpedo gear and fittings were also made. The first three boats were completed in April, 1916, and were inspected by the Sea Lords who considered them successful in every way. As a base, the South-Eastern Railway Company's

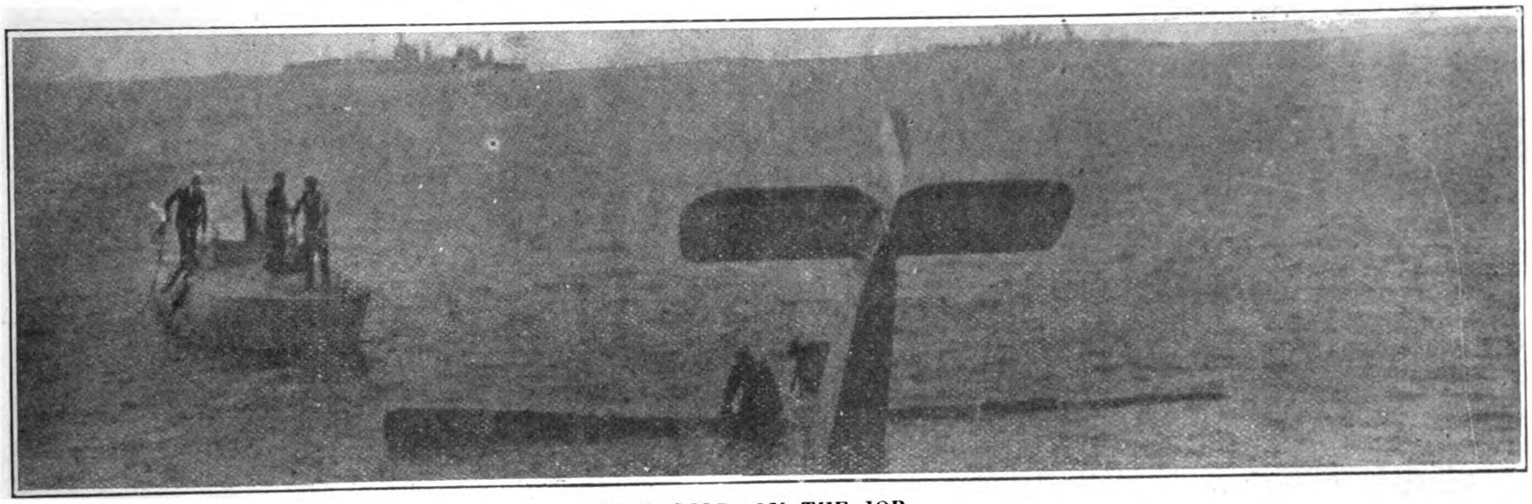
pier at Queenborough had been decided upon and the officers who volunteered for service on these boats for some time lived on the pier, using the station buildings as their living quarters and mess. Even in Sheerness it was not known what the boats were for, their running for training purposes being very largely carried out at night.

It was decided that the crew should only consist of two officers and, with a view to their being thoroughly conversant with the motors, they all spent a month or so at Basingstoke seeing them built and go through their trial.

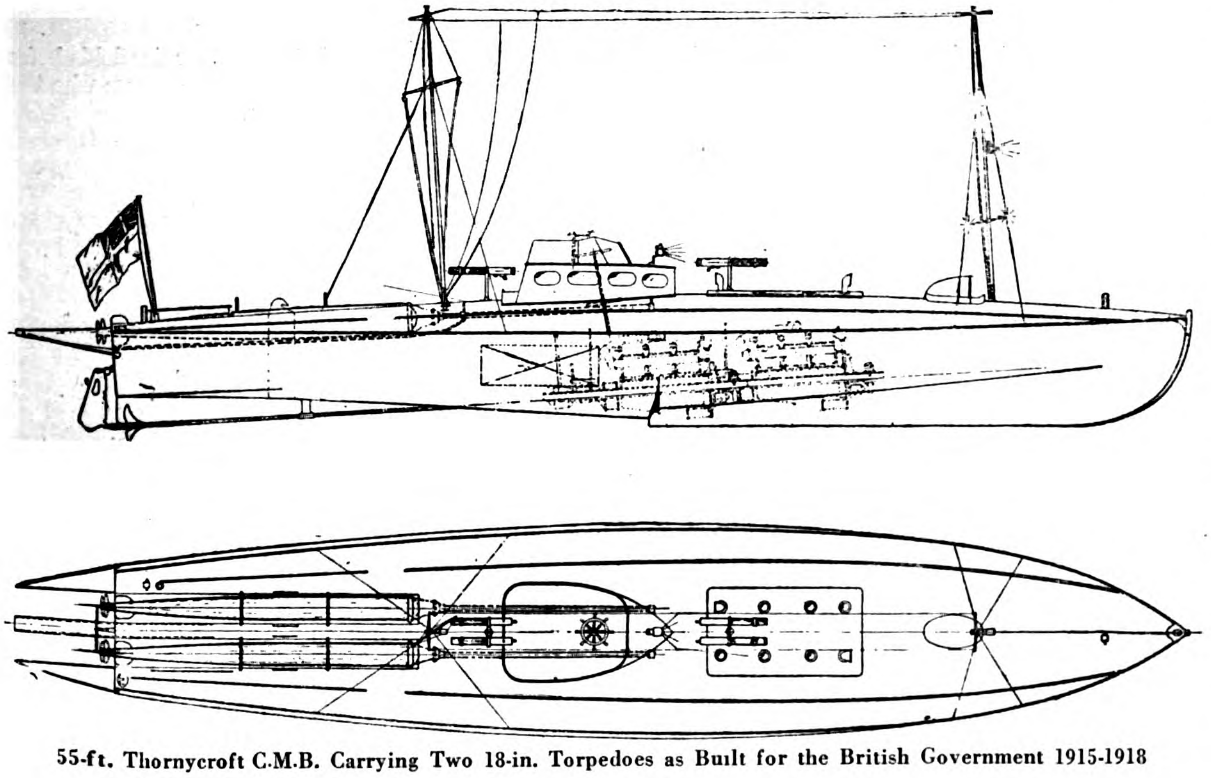
Very few mechanics with the knowledge of motors of upwards of 250-horse-power, of more or less the



40-ft. Thornycroft C.M.B. Carrying one 18-in. Torpedo as Built for the British Admiralty, 1915-1918



THE C.M.B. ON THE JOB
Rescuing the Crew of an Enemy Plane Brought Down by the Fleet.



55-ft. Thornycroft C.M.B. Carrying Two 18-in. Torpedoes as Built for the British Government 1915-1918

aeroplane type, were available in the country generally, and there were certainly none among the artificer branch of the Navy; so that not only had the officers to get accustomed to handling the boats and firing their torpedoes under novel conditions at speeds well over 30 knots in the dark, but a staff of artificers and mechanics had to be trained to look after and maintain the motors.

There is no doubt, however, that after the few months' practice which they all had together, the officers themselves attending to every detail of the motors and boats, they were worked up to such an efficient stage that it would not have been possible for the motors and boats to have been run better. The captain of the different boats knew their brother officers' methods of handling and manœuvring

so well that they were able to perform the most complicated operations under Lieut. Hampden's direction at night without difficulty.

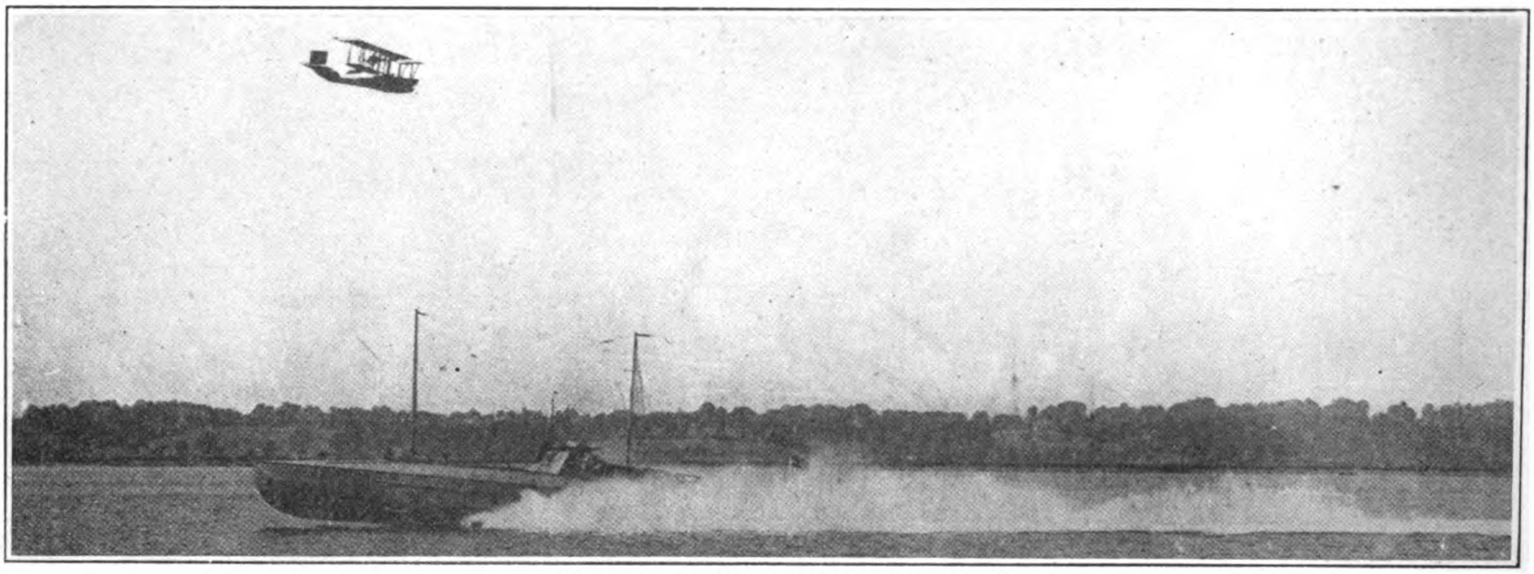
The officers who volunteered to serve were largely recruited from the Harwich Force, and the captains of the boats were nearly all "R.N."—Lieut. Erskine Childers, R.N.V.R., had been persuaded by Capt. Barry-Domville to join as navigator, in view of his exceptional knowledge of the German coast, Lieut. Dayrell-Reed, R.N.R., and Surgeon-Lieut. Anson, R.N., who transferred in order to take charge of a boat. The first published report about C.M.B. operations occurred in an announcement of bombing operations by aircraft at Ostend, the report stating that, as a result of other naval operations, certain destroyers were sunk. Four of the boats had been sent over at the end of the year 1916 to Dunkirk, in readiness for a suitable opportunity. There was no prepared base, so that the boats and their gear were berthed on a large steel barge, on which the officers and crew lived through the winter. A disused bathing-box served for Lieut. Childers' navigation office!

The winter was a very hard one and great difficulty was experienced in keeping the motors and torpedoes from freezing up. However, Lieut. Beckett and the other officers of the Dunkirk party were rewarded for their patience by their successful attacks. During the first few months only one of the officers (Lieut. Anson) was hit by a machine gun bullet, the boats all getting home

new conditions. Greens, Fiats and Sunbeams were all utilized in addition to the special Thornycroft engines. The conditions under which motors have to work in these boats are, undoubtedly, more severe than in any type of aeroplane. and a great deal of work was entailed in adapting them. With the greatly increased number of boats there were not enough R.N. officers who could be spared, and a large number of R.N.R. and R.N.V.R. joined the C.M.B. Service, after the new field of operations had been started by volunteers from the original C.M.B. Section, who did not at the time expect so good a future for these boats elsewhere. The 55-footers, in addition to two officers carried two motor mechanics and a wireless operator. The motor mechanics were drawn from the *Hermione*, and had been largely recruited from Canada, Australia and New Zealand.

It is quite certain that there is no other motor mechanic's job which is comparable in risk and severity of the work which they have had to perform.

The 55-ft. C.M.Bs. used for anti-submarine work were based at Portland and Portsmouth, as well as Dover. Dover's advanced base at Dunkirk was also then provided with suitable accommodation for the boats and quarters for the officers. The Dunkirk boats had in addition the opportunity of actions with the German patrol boats and destroyers. Besides being the first base from which a success was achieved it has also shown the greatest amount of running, some tens of thousands of miles having been covered in



Thornycroft C.M.B. Making 50 knots

safely—in spite of vital parts of the motors having been damaged on two or three occasions by enemy action, repairs being effected by the resource and energy of the motor mechanics.

In the meantime, an experimental boat of twice the power designed to carry two torpedoes instead of one was built, and it was considered that this larger type might be valuable to act against the German submarines. Captain Humphrey T. Walwyn. D.S.O., R.N. (of the Anti-Submarine Department) carried out trials with this 55-ft. boat, armed with one torpedo and four depth charges instead of the second torpedo.

As a result of the trial, the Admiralty decided to build a large number of boats with all speed, and Thornycrofts instructed to arrange with firms accustomed to light boatbuilding to build to their designs, and arrangements were made with about a dozen firms, *i.e.:* Messrs. The Hampton Launch Works, Limited; Messrs. Salter Bros.; Messrs. Tayler & Bates, Ltd.; Messrs. Tom Bunn & Co., Ltd.; Messrs. Frank Maynard; Messrs. J. W. Brooks & Co., Ltd.; The Rowhedge Iron Works; Messrs. Wills & Packham; Messrs. Camper & Nicholsons, Ltd., etc. etc.

So many boatbuilders had left their ordinary work to go to the aeroplane factories that it was most difficult to find men of the right class and, in many of the yards, the boats had to be built with the assistance of men who had had no previous experience in boat-building. The supply of the motors was also a difficulty, and it became necessary to adopt motors of various aeroplane types and to make them as suitable as possible for the

patrols which had been carried out between the minefields before the entrances to Zeebrugge and Ostend by the officers who took their turn at the advanced base.

Since it has been possible to obtain information from the Belgians who lived in these places during the German occupation, the Commodore at Dunkirk states that the German naval authorities were in utter dread of them, and never knew when to expect them. Their own motor patrol boats, or "P.M.Bs." as they were called, never ventured out at night or when the weather was the least bit bad.

During their patrols up the coast they were constantly fired at by the shore batteries and, unfortnnately, more than one has been lost, having apparently received a direct hit at short range.

One of the most interesting successes was described in the *Daily Mail:* "Five German destroyers, returning from their dash through the Straits, encountered small high-speed craft, which succeeded in torpedoing one or more of them," but the newspaper account did not tell how one of the officers—in the haze—went so close to make his attack that the blast from one of the destroyers' 4·1-inch guns which they fired at him actually blew his cap off his head without damage to the boat or injury to himself.

For North Sea work a new base was established not far from Harwich, the particular spot chosen being considered admirably suited for a first-class shore establishment, with every facility for maintaining the boats in the best of order. Residents in Harwich

and Felixstowe have been familiar with light cruisers putting out to sea with a couple of 40-ft. C.M.Bs. hanging from their davits. The quickness with which these boats can work up to their speed, which is more than the majority of destroyers in favourable weather conditions, has enabled them to get away from Germans successfully after attacks; but, the aeroplane or seaplane having greater speed has, as was expected, proved a formidable adversary when met with in the daylight, and it will be recalled that in the summer of this year six boats were reported as lost after a hostile aeroplane attack. Fortunately, they were not all lost, and four of them were able to make their way into Holland, but not until they had accounted for several of the planes which had attacked them in very great numbers and had used up all the ammunition for their Lewis guns.

In previous actions the C.M.B. officers had had to defend themselves against aeroplane attack, and the boats and officers had been hit on numerous occasions. The new tactics of the enemy, attacking even destroyers with large numbers of planes at once, obviously put them in a very difficult position.

There have been many cases of splendid pluck and heroism in the numerous fights which the C.M.Bs. have had, and in this particular North Sea action, after the boats had all been riddled and most of the officers hit, Lieut. Lewis—who was wounded himself—succeeded in keeping another officer afloat on a large fender for over two hours and saving his life.

The blocking actions at Zeebrugge and Ostend have been very fully described as far as the larger vessels are concerned, and the official reports made reference to the good work done by the C.M.Bs., but it is not generally known what a leading part the C.M.Bs. played, and that many of the officers who were given decorations were in charge of them! In the Zeebrugge action the C.M.Bs. were responsible for not only making the smoke screen (which they effected by running ahead of the other vessels at high speed and emitting smoke clouds from their exhaust, by a special smoke-producing contrivance), but had to mark certain positions with flares to indicate the right turning points for the blocking vessels. Two C.M.Bs. entered the harbor in the early stages of the operation to torpedo a vessel alongside the Mole, while others were specially fitted with Stokes trench mortars to throw bombs over the Mole on to the aeroplane sheds.

In the second action at Ostend, when the *Vindictive* was placed in position, two of the C.M.Bs. were specially told off to torpedo the ends of the piers to put the guns on them out of action. While others made the smoke screen one of them went in ahead of the *Vindictive* burning flares to indicate the exact position of the entrance.

Admiral Keyes, in his official report of the blocking actions, referred to the highly efficient handling of his boats by Lieut. Welman, R.N., the officer in charge of them and the Dover Base. Their high speed and small size may, to some extent, be a source of safety, but there is no question that the duties which they have undertaken have made the service one of the most risky in the Navy.

It is a remarkable fact that, with one exception, all the C.M.Bs. which took part in the blocking actions succeeded in getting away—although they were, in many cases, very battered and war-worn, with numerous officers and men wounded.

Mine-laying hardly sounds the work which would be expected for these small craft to undertake, but they have been used very effectively to lay mines where the ordinary mine-laying vessels could not go, their shallow draft enabling them to pass safely over enemy minefields and their high speed to approach unexpectedly enemy waters.

It is not possible to give an account of all the operations and actions these boats have been in and the gallant deeds of their officers and crews, but the list of officers who have received the D.S.O., D.C.M., and other honors, gives the best possible indication of the opinion of the Admiralty concerning the part they have played in the naval war!

Unhappily, a number of officers and men have lost their lives and have been badly wounded, but, considering the risks they have run, the percentage has not been unduly great—probably not more than in the Air Service.

Reference has already been made to the difficulties involved in building up a fleet of this special type of boat, after the labor and material in the country had been so thoroughly appropriated to aeroplane building and other classes of work which were given the highest priority.

Some reference to the work of the men who built the boats, motors and ran the trials is due. They necessarily knew, in the early stages, the details of the boats and had a good idea of the work which they were intended to do. They kept the information to themselves and put their best possible efforts into their work. Coming in contact, as they did, with the officers who were going to fight with the boats gave them additional interest in building them as well and as quickly as possible.

In this short history it is not proposed to go into details of design and construction. It has been pointed out that there were necessarily many problems to meet the very special conditions. The various devices which had been adopted in the old steam-torpedo boats could not be applied without modifying them to suit the new conditions, and it may be safely said that every detail in the boats, from the torpedo director to the keel, had to be specially worked out afresh.

While the designers and builders alike take a pride in their production, they are all agreed that however good the boats may be the successes which have been obtained with them are due to the British Navy officers concerned and, without their skill and endurance, the boats would have done nothing.

The Japanese Shipbuilding Industry

Profits Decreasing: Future Not Bright

The Japanese shipbuilding industry is now badly off due to the difficulty in getting a supply of materials keeping the cost of construction higher than that in England and America and also to the decrease in the demand for ships since the end of the war. The dockyards which sprang up or were extended in countless numbers during the war, have long been feeling the effect of the slump; many dockyards were closed shortly after the restoration of peace. The American orders for Japanese ships in exchange for American iron, which kept the Japanese dockyards fairly busy, have been completed. The demand for ships in Japan has decreased considerably of late due to an unprecedented crisis in Japanese shipping circles. Some dockyards, though desirous of effecting liquidation, cannot do so owing to lack of funds for the purpose. The larger dockyards are also feeling the effect of bad times. Soon after the armistice, the dockyards capable of constructing steel ships of 1,000 tons over (gross) in Japan numbered 45, with 135 slips, these have decreased by more than 50 per cent. The situation is expected to become still worse in view of the gradual decrease in the demand for ships. Old contracts have almost all been fulfilled and the dockyards are anxiously awaiting new orders, expected to come after the present crisis. Except a few dockyards having special connections with the Naval Department, there is little work for the next year. Orders from the Naval Department in connection with the eight-eight squadron scheme will not suffice to keep these yards going. There are at present no transactions in the selling and buying of ships. The Osaka Ironworks, one of the leading dockyards in Japan, is an exception. It is comparatively well off due to the non-speculative policy it adopted during the war boom.

The following figures indicate the financial positions of the leading dockyards in Japan:—

Names of Dockyards.	Paid-up Capital.	Reserve and Sum Brought Forward (from first half 1920)
Kawasaki	26,520,000	29,349,000
Osaka Ironworks ...	10,500,000	9,012,000
Ishikawajima	3,520,000	3,440,000
Uraga	6,250,000	2,847,000
Yokohama	10,000,000	2,167,000

As regards the profits earned during the first half of this year, they averaged Y.88.50 per ton, but the profits for the second half of this year are expected to show a great decrease. They are estimated at about Y.71 per ton.

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, JANUARY, 1921.

Lest we Forget!

"It wants more courage to make peace than to carry on a war. *People who demand war and criticize peace are generally weak people who have never fought.*"

ELIHU ROOT, the foremost American statesman of our time.

The Consortium is Honest

FOR the benefit of some of its Chinese critics, it may be no harm to say that one thing is certain about the motive back of the new consortium. It is an honest motive. No sensible person criticizes its honesty.

For that reason, among others, the American group is to be congratulated upon the choice of Mr. Frederick W. Stevens as its Peking representative. Mr. Stevens has been cast for a big job. He has the three chief essential requisites for success—honesty, intelligence, friendliness. The impression he made upon his naturally critical (albeit very friendly) first Chinese audience was one of plain-as-day honesty. Excellent! He can build on that. The virtue most highly prized in Asia is honesty.

His first speech at Shanghai was matter of fact, simple, to the point. He left oratory to the "orators." That was very good. We have a super-abundance of florescent flubdub, and facts simply stated are ever welcome. He told us three things, very honestly and very sensibly: The first Consortium loan *must* command the confidence of American bond-buyers as well as Chinese borrowers; the security, therefore, must be ample; and there must be no alienation of Chinese rights through "concessions."

We suggest to this pleasantly efficient plain person from Ann Arbor that he will do well to be a good listener in Peking; and, to the Chinese who love their country and seek to serve her interests, we would say: "Tell your troubles to Mr. Stevens. If be can help you, we believe that he will. But—and this is very important—don't try to 'put anything over.' It wont go, or we miss our guess. That Scotch-Michigan mixture is tough stuff, good to lean upon and fool-proof."

* * *

Coal Utilized as War-Making Fuel

LED by the representative spokesman for American newspaperdom—the able and enterprising *Editor and Publisher*—newspapers and periodicals of the United States and Canada have united in efforts to slay the serpents of propaganda. Some good work has been done, but one field has still been left untouched by Brother Brown of the *World* Building—Far Eastern war-making propaganda. Here are two illustrations culled from the last batch of home clippings, both mined out of the same material, Chinese coal shipments to Europe:—

From the *Saturday Evening Post*:

"Events of world-wide importance sometimes take place without attracting attention at the moment. The delivery of a hundred thousand tons of Chinese coal at Marseilles received no comment from the American press. Failing to procure sufficient coal from Great Britain or Germany, the Danish state railways have contracted for ten thousand tons of Chinese coal. This is an event of first-grade importance and represents a marked advance in the industrialization of China.

"China lacks railway transportation, of course. To what extent her mines are adapted to machine operation is not yet known. But it is clear that with rising costs of operation and falling output per man in Europe and North America the Chinese coal mines, with the cheap labor at their disposal, will soon become an active factor in the export coal trade of the world. *The mines are largely under operation or control of Japanese. Shipping is in Japanese bottoms, which introduces another factor into the situation.* Certainly China may be expected to supplant Australia and British Columbia in the markets of our Pacific States. Replacement of British coal by Chinese coal in South America would exert the most profound influence upon the manufacture and trade of the British Empire.

"At the bottom of the coal difficulties of the United Kingdom is an understanding between the British and the German coal miners with respect to wages, output and living conditions. If the Chinese miner is left out of the calculation, he may spring a surprise upon the British and German miners. Coal is such an important factor in the routing of trade over the world that the appearance of a new source of supply is bound to exert far-reaching influences."

From the Wheeling (W. Va.) *Intelligencer*:

"Chinese coal has been received in considerable quantities by Marseilles, France, and Denmark has contracted for a supply sufficient to protect Danish industry through the winter. *Coal is mined in China under concessions granted to Japanese operators, and its appearance in the European market indicates the first possibilities of considerable competition for the European coal supply.* China is reported to have coal deposits far greater than all of Europe combined, and under efficient direction the Chinese mines can provide a very large supply, both for Japan, for the Pacific coast of the United States, and for Europe.

"The Chinese mines have been operated in a crude manner, and it is estimated that their production has amounted to about 120 tons per man per year. The production of the American mines, with improved machinery, has averaged close to 1,000 tons per man. It is not to be expected, therefore, that even China's cheap labor will result in the production of a large amount of cheap coal, but improved appliances may come to be used in the Chinese mines and with the enormous labor supply in that country, Chinese coal may become an important factor in the world market."

The *Saturday Evening Post* is a power for good in the homeland. It is more widely read than any other publication. It has a fine record for courageous and wholesome expression of Far Eastern truths. Editor Lorimer and Mr. Sam Blythe have "spilled the beans" to good purpose on more than one notable American-Asiatic occasion. "The Flying Wedge" won deserved international celebrity. We feel quite sure that our Philadelphia and Wheeling contemporaries will appreciate some facts showing how, despite their knowledge and care, the unscrupulous anti-Japanese press agents have hoaxed them in this matter of the Chinese "sending coals to Newcastle." The great national homeside weekly and the go-ahead West Virginian newspaper would not willingly print untruths. That they were caught off their guard is merely proof of the cunning conspiracy that is at work to make mischief between America and Japan, *for anti-American purposes*.

The shipping of Chinese coal to Europe is due to (1) the reduced available European output; (2) the cheapness of Chinese coolie labor and increased wage demands of European labor; and (3) available tonnage and attractive freight rates. Foreign firms in China (including American steamship owners) rushed to take advantage of this chance to capitalize Chinese coal and China's cheap millions. The Scandinavians were the first buyers and the chief pacemakers at Shanghai were a European and an American firm. The Japanese entered the competition. It became general and was food for much Shanghai gossip during the summer months—especially while the British mining troubles were piling coals of sorrow upon the much-distressed head of Premier George. The assumption that the Japanese monopolized the traffic is vicious and childish larryfarrel. They were in no position to do so. There was a wide excess of available tonnage; so much so that the July number of the *British Chamber of Commerce Journal*—the official organ of the British chambers of Hongkong and China—summed up the

shipping situation, while the coal boom was on, as follows :—

> "Even coal charters, on which owners could almost always fall back upon in tho absence of better employment, are difficult to obtain at anything like remunerative rates."

The assertion that Japanese control the mines of China is what might be called a "hardy annual." That it is utterly false is well known throughout the Far East ; but it is just as well to clarify the minds of American editors who cannot be expected to know the ins and outs of Chinese industry. The following table gives the facts regarding the ownership and operation of Chinese coal mines :—

Name of Company	Nationality	Location	Output tons	Quality
(Mines under Foreign Control)				
Pekin Syndicate, Ltd.	British ...	... Honan ...	800,000	Anthracite
Shantung Railway ...	Japan ...	... Shantung	700,000	Anthracite and Bituminous
Fushun Colliery, Yentai Colliery	S.M. Ry. ,, ...	... Manchuria	3,300,000	Bituminous
Lincheng Mines ...	Belgian	... Chihli ...	200,000	,,
		Total...	5,000,000	
(Mines under Chinese and Foreign Management)				
Kailan Mining Administration ...	Sino-British...	Chihli ...	4,500,000	,,
Mentowkow Mines ...	,, ...	,, ...	80,000	,,
Pensihu Mines	Sino-Japanese	Manchuria	450,000	,,
Niusintai Mines ...	,,	,,	80,000	,,
Hsinchiu Mines ...	,,	,,	80,000	,,
		Total...	5,190,000	,,
(Mines under Chinese Control)				
*Ihsien Mining Adm...	Chinese...	... Shantung	600,000	,,
Chinghsing Mining Adm.	,, ...	... Chihli ...	300,000	,,
Paochin ,, ,,	,, ...	... Shansi ...	800,000	Anthracite and Bituminous
Tsechow ,, ,,	,, ...	,, ...	120,000	Anthracite
Tatung Mines	,, ...	,, ...	120,000	Bituminous
Pinghsiang Mines ...	,, ...	... Kiangsi ...	900,000	,,
Poshan Mines... ...	,, ...	... Shantung	250,000	Anthracite and Bituminous
Linhokow Mines ...	,, ...	... Honan ...	200,000	Bituminous
Chinchow ,, ...	,, ...	... Chihli ...	40,000	,,
Hsintai ,, ...	,, ...	... Shantung	30,000	,,
Ichow ,, ...	,, ...	,,	20,000	,,
Chiachiawan Mines...	,, ...	... Kiangsu...	36,000	,,
Tanshanwan ,, ...	,, ...	... Hupeh ...	70,000	,,
		Total...	3,486,000	
Total by Foreign Methods		...	13,676,000	
Mined by Native Process ...		...about	3,000,000	
		Grand Total	16,676,000	tons

These facts clearly demonstrate that it was not possible for the Japanese to monopolize either the mining or the shipping of Chinese coal ; and we have gone to the trouble of presenting them primarily in order to warn the American editor that it is well to examine anti-Japanese "free" press matter with an eye wide-open for rather more than the average propagandist tendency to deceive. The agents of Trotsky are very busy just now at Shanghai and in New York ; their names are well known to American officials ; and one of their chief "poisoned darts" is the iterated insinuation that "Japan plans to flood the world with cheap Chinese coolie-made goods." No, Brother Brown and Brother Lorimer and our wide-awake Wheeling friend ! They are flag-waving, so-called Americans who have that "get-rich-quick" idea planted solidly in the back of their heads—the same long-nosed gentry who are to be found at all angles of this war-making in the Pacific, *the authors and purveyors of this and other libels levelled at Japan.*

* * *

Chinese National Assembly will Repudiate Peking Loans

ACCORDING to the *Canton Times*, the organ of the southern Chinese government, the members of the national parliament now in the Kwangtung capital recently convened and protested against giving the land-tax as security for foreign loans. The protest says that "the fundamental law of the Chinese republic forbids the government from contracting public loans or increasing the burden of the people without the consent of the national assembly. It is the intention of the national assembly to repudiate all such loans contracted by Peking."

* American capital is reported to be interested in this property.

* * *

American Economist Consul

MR. Frederic Lee, the new American economist consul for the Far East, will have his headquaters in Shanghai at the American consulate. This does not at all mean that his entire time will be spent in Shanghai, as he will travel through all parts of China, studying economic conditions and visiting the consulates in other cities. Mr. Lee spent two years in Japan several years ago, at which time he was a professor of economies in the Sei Gakuin College in Tokyo and he has since held an office in the State Department at Washington, where he handled economic problems in the Far East. Mr. Lee is especially interested in economic conditions in Japan, Manchuria and Eastern Siberia. He will deal with trade promotion only indirectly as his work will be of broader scope and will involve primarily such things as harbor improvements, the development of the cotton-spinning industry, and the financial situation. Mr. Lee received his doctor's degree in economics at Yale University and he also did graduate work at Harvard.

* * *

British Training for Chinese Students

WE are glad to see that interest in the movement for providing training in British workshops, laboratories and technical institutions for engineering students from overseas does not weaken. Quite the reverse. It is not very clearly realized that students trained in Great Britain become permanently influenced in favor of British machines and British methods. The instance recently cited of the engineering and shipbuilding works promoted some time back at Canton by a student returned from the United States, who placed orders for the machinery and equipment with the States, is being given wide publicity amongst engineering circles in Great Britain. The Trade and Industry Committee of the Royal Colonial Institute in London has initiated and is carrying out a scheme for providing training for students from British Possessions. The British Engineers' Association has similar work in hand, as also has the British Electrical and Allied Manufacturers' Association, endeavors in both the last-named schemes not being limited to any particular territory. All such plans, moreover, have the hearty support of the Federation of British Industries. It is understood that the British government has proposals under consideration for devoting the Boxer indemnity to defraying the expenses of the technical education of Chinese students in the United Kingdom. Manufacturers in Great Britain are coming forward and co-operating. The practical assistance of British interests abroad may be safely counted upon, but in this respect a good deal more might be done. The position is distinctly favorable for giving British training to foreign students. The extent to which these facilities are used will depend not a little on the manner in which they are brought to the notice of students abroad. In doing this the aid is solicited of official, engineering and commercial circles in the Far East.—*Engineering.*

* * *

Commercial Morality

A FAVORITE pursuit of the anti-Japanese writer is to attack the honesty of Japanese business methods. For example, there is that story of the British house in the Straits Settlements that ordered a supply of lead pencils during the war. According to the anti-Japanese story-teller, when the pencils were

received and after most of the stock was sold "it was discovered that the crafty Japanese had conserved their store of raw materials by merely inserting small pieces of lead at each end of the wooden sticks. When complaint was made that the pencils were not in accordance with sample, the——(a famous Japanese exporting house) wrote back suggesting that the purchaser had better examine the sample. That was done when, lo and behold, the Japanese rejoinder was proved correct. The sample, also, was minus lead in the middle!"

Now, that might be a very good story for an after-dinner guest of the Modern and Questionable Society of Jolly Jap-Slappers. How about the morality of such slanders? How about the intelligence of the good people who retail and believe such nonsense?

When we heard this story coupled with the name of a Japanese firm that is one of the strongest and most successful in the world, we invited the thought of the narrator to these two pertinent questions. Success is never won along dishonest lines.

American manufacturers, American traders had to learn that lesson. Some of us are old enough to remember the international jest about "those Yankee wooden nutmegs." We are not yet out of the wood and the time has not come for shouting; still we have learned a thing or two, and so have all the others. We have all learned from the English the wholesome truth, "Honesty is the best policy." Upon that sound foundation, the vast commerce of England has been built.

When Harry of Monmouth stood with his little army before the gates of Harfleur, the merchants of England were known throughout Europe as men of their word. "All wool and a yard wide" gave England control of the cloth trade. The tradition of British mercantile honesty walked with knight and squire and archer and man-at-arms in the "White Company" from battle into business. "Value for value received." The guilds of London, the merchant princes that laid the foundations for our present-day chambers of commerce prided themselves chiefly upon their probity and the fine quality of their wares. And well may England look the world in the face, to-day, and say to all: "It is made in England." That still goes. It means much to an empire radiating over the earth from a tiny group of "tight little, right little islands." It has meant much to the real progress of the world.

We were young and careless, and often the name of American business has been soiled by people who were Americans in name only. "Embalmed beef" was sold to our soldiers during the Spanish and Philippine wars and not so long ago we saw a father and son sitting in front of a military court in the homeland, blandly admitting that they had bribed a quartermaster-captain of their own race to unload upon Pershing's army "rainproof" coats as porous almost as muslin. Then, there were those blankets of shoddy that cost so many gallant boys their lives. "If Cleopatra's nose had been an inch shorter," we recall, "the history of the world would have been changed." Most of the stories of Japanese "dishonesty" emanate from gentry whose noses are more noted for length than their race is noted for commercial morality.

All nations have to learn that honesty is the only sound foundation of permanent business. "Character," said the late J. P. Morgan, "is the basis of credit." It is. When the British market was flooded with cheap German goods, the home manufacturers of Britain coined the phrase, "cheap and nasty." It stuck. Home manufactured goods were preferred, not just because they were made in Merrie England but because they were better than the German imitations. The great trade of France in luxuries was built upon quality. "They do these things so much better in France." The stuff was good. It held the markets that it won.

A few years ago, the Japanese houses engaged in foreign trade could be counted on the fingers of one hand. They were pioneers. That they have become among the greatest trading firms on earth is (to any business man) proof positive that they have been conducted along honest and dignified lines. "Up like a rocket and down like a stick." China knows some foreign trading concerns to which that old saw applies. "In with a brass band and a flourish of trumpets and out with the bailiff, unsung but not unwept." We know one or two like that. That cannot be said of any of the Japanese trading houses.

As others had to learn the great English lesson of honesty in business, so has it been with the Japanese. While the old princely houses of Nippon may well pride themselves upon their fine record, among the younger and less experienced firms there was a disposition to turn a quick penny without enough heed of the future. We hold no brief for the commercial morality of Asia. It has, we fear, quite a long way to go before it will catch up with the spirit of the Middlesex mercers. It will do that, doubtless, in time. China, for example, has queer notions of business morality. The Chinese, bless their hearts, have deluded a large part of the world into believing that Diogenes and his dog and his lamp wasted a whole lot of time looking for the honest man when they might have trapezed over to Cook's and bought a ticket for friend Putnam Weale's "City of the Wonderful Lamp." Apparently, some of our home papers are now sustaining the shock of their lives. A great Shanghai department store has just been blacklisted for infringing a well-known American patented garment and other such things have got into print. No, the Japanese have done nothing to earn the Nobel prize as the premier trade fakirs of earth. The honor—such as it is—belongs to another race, as its finest members honestly confess. "Be honest; for to be honest as this world goes is to be one man picked out of ten thousand."

* * *

Off with the Old Love

IN 1912, certain prominent French and British capitalists combined with high officials of the Chinese government to form an industrial bank in which the Chinese were allocated one-third of the shares. The result was the organization of the Banque Industrielle de Chine under a French charter. Within a short time after it started business, this bank signed a contract with the Chinese government to raise a loan of 150,000,000 francs for the construction of the Pukow Harbor, erection of a bridge over the Yangtze river at Hankow and development of the public utilities of Peking. Chief among these Peking public utilities was the building of the tramways. As security for the loan, the Chinese government set aside the Wine and Tobacco taxes. Soon afterwards, the bank obtained a contract for the construction of the Chinchow (Yamchow)-Yunnan-Chungking railway, carrying with it a loan of 600,000,000 francs. Within a year, the new institution had obtained some of the choicest concessions in China in partnership with the high officials then running the government. An ideal business arrangement!

During the war, when the Peking government was, hard up for funds and the French bank could not place Chinese securities in the French market, monopolized by French needs, the Chinese obtained funds from Americans and handed over the security originally set aside for the French bank. This called forth an immediate protest from the French minister. Nevertheless, the American loan went through, despite the French protest. Another few years have passed. France is staggering under its war debts. The investing centre of the world has shifted from Paris to New York. The Chinese have been quick to cast off the old love for the new. From all sides we hear of schemes of co-operation with Americans. Chinese-American banks, mining and industrial enterprises are all the rage. The French bank, which came to the rescue of a hard-up government in 1912-13, is ostracised. It was not included in the new French group in the consortium. So the Chinese (the very same officials who induced the French to enter the field in 1912) are now clamoring for a revision of the French contract. As a result, we have before us the following news items which appeared in the *Shanghai Times* on December 22:—

"TRAMCARS FOR PEKING

"A FRANCO-CHINESE BANK TO SUPPORT ENTERPRISE

"Peking, Dec. 9.

"A decision has recently been reached among the Chinese officials and

capitalists to start a tramcar system in Peking shortly. This question has been frequently discussed, but the work could not be started owing to financial circumstances. The problem was reconsidered at the cabinet meeting December 7. It is understood that the work will be supervised by the Franco-Chinese Industrial Bank, which some years ago obtained the right for the construction of the tramway, and that the minister of the interior, Mr. Chang, and the former minister for finance, Mr. Wang Ko-min, will act as the leaders of the Chinese capitalists.

"REVISION OF CONTRACT

"In regard to the contract made by the Banque Industrielle de Chine for the construction of tramways in Peking in the 6th year of the republic, for which a large sum of money had been advanced, the government, on account of the said bank recently urging the fulfilment of the contract, has issued instructions to the ministries of finance and the interior respectively ordering them to make a revision in the contract in order to prevent the bank from making any further demands."

Co-incident with this comes the news that the Yunnan authorities have telegraphed a lengthy protest to Peking against the Banque Industrielle de Chine's railway contract, insisting upon its cancellation upon the grounds that work has not been started since the armistice. The protest gives ten "reasons" why the Peking government should follow the precedent created by the cancellation of the American Canton-Hankow concession. It reproaches war-scarred France with having now no money with which to carry out the French plans, and charges, that "they never intended to build the railway, anyway." The Yunnanese claim to be the only Chinese who sacrificed their lives in French territory during the great war, and in compensation, the French government should concede their request for cancellation of the railway concession and "refrain from further oppression of their provincials." The Yunnanese protest, as translated from the Chinese papers, covers several typewritten pages, and is valuable as indicating the re-birth of a provincial determination to be consulted in the construction of railways within provincial borders. The Yunnanese emphasize that this interference by the central government in provincial railway matters brought on the revolution of 1912, and they warn Peking that the people of Yunnan are as brave as the Szechuanese in defending provincial rights.

The upshot of the situation herein revealed is that the Peking tramway rights of the Banque Industrielle de Chine are to be set aside by Peking, while the Yunnanese, who were not let in on the ground-floor of the railway deal, are clamoring for the repudiation of the railway contract held by the same bank.

The moral of this story is obvious.

* * *

Friendly Advice from a Good Neighbor

DURING his recent visit to Peking, Baron Y. Fujimura addressed to the young men of Peking Christian University a speech that Young China will do well to commit to memory and adopt as a primer of good citizenship. The Baron represents the very best that is in Japan. A merchant prince who wields a power all his own in the House of Peers, he is a liberal with the saving quality of sound sense. Too often, liberals in politics are good-natured but still dangerous cranks. As Theodore Roosevelt once said, the sincere crank is often the worst enemy of real progress. Baron Fujimura is always reasonable and practical and very tolerant in his criticisms.

Everything that he said to the young men of Peking applies to all classes in the China of our time. Japan has pointed the way to China, and China's alternative to looking facts squarely in the face and taking a leaf out of Japan's book is certain and dismal failure.

Presenting a picture of Chinese actualities much finer than has been accomplished by any visiting western statesman or publicist that we can call to mind, this friendly Japanese recalled Japan's period of probation, danger and wholehearted effort in these words :

"As I recall the conditions 25 years ago, I distinctly remember that they bore a very close resemblance to the conditions now prevailing in China. I shudder sometimes with the sense of a hairbreadth escape, while walking in what were once 'foreign concessions' in such towns as Kobe and Yokohama, but which are to-day in a state of decline and decay because the same forces of peaceful penetration or trade conquest which you see in China to-day were in full swing in my country, in those days. It is, indeed, a very narrow escape that we had; and, though there were some fortunate circumstances for Japan, we must say that we have to attribute our deliverance to the united patriotism and self-sacrifice of our predecessors, many of whom are still alive."

Solid, wholesome truth. The Elder Statesmen of Japan were patriotic gentlemen. Young China, look upon their picture and then gaze upon your own Grand Old Masters of Graft! The history of nations is the story of men.

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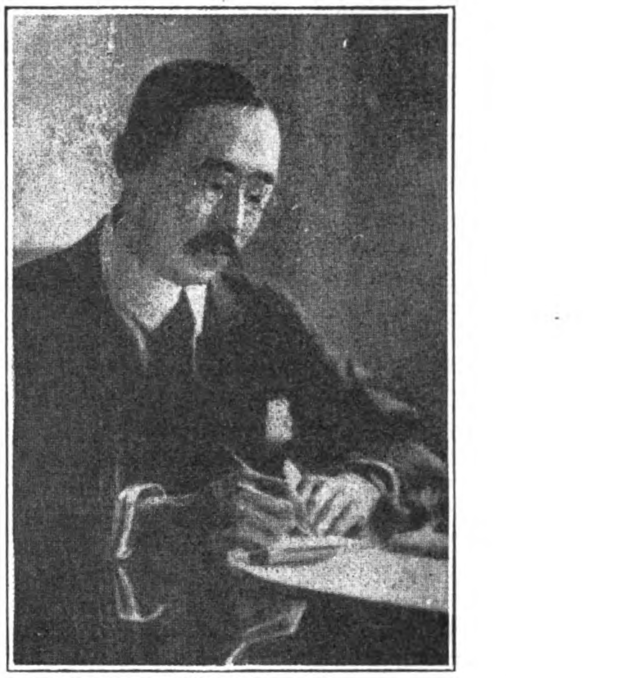

YOZO TAMURA

A Japanese engineer, who at 32 has been appointed American representative of the South Manchuria Railway and is here in New York to spend twenty millions for equipment.—From *The New York World*, Nov. 14.

* * *

"The Edgar Allen News"

A MINE that is constantly producing facts having a broad interest ranging over the engineering field is *The Edgar Allen News*. In admirable contrast to most house organs, it treats of subjects of general interest rather than the special lines which Edgar Allen & Co., Limited, have established as standard products in their own sphere. That, undoubtedly, accounts for the universal willingness of engineering editors to quote this very authoritative trade periodical. Here is a good example :—

"A reader of No. 7 of *The Edgar Allen News* noticing a paragraph refuting a suggestion that the cutting power of oil hardening steel is less than that of water-hardening steel, wrote to the Editors to suggest that there must be some reason or reasons for the theory being so generally held, and suggested an explanation. He pointed out that occasions arise when a tool or cutter made from a water-hardening quality of steel is, owing to intricate or weak design, quenched in oil with the object of minimizing distortion or the danger of cracks. These tools, though giving good hardness, seldom if ever, according to our correspondent, give good cutting power. In conclusion, he deduced from this that a distinction between oil-hardening steel and oil-hardened steel is necessary.

"In reply, it was stated that there is no reason at all for the alleged general opinion that oil-hardening steel will not carry so fine a cutting edge as a water-hardening steel. It has been said, and pretty generally believed by uninformed people, that the moon influences the weather, although scientists have repeatedly proved this theory to have no foundation in fact. An oil-hardening steel will take just as fine a cutting edge as a water-hardening steel. When a steel is quenched in water it cools more quickly than when it is quenched in oil. If the steel has been made to quench in water and is quenched in water the result will be satisfactory; but if, on the other hand, a water-hardening steel is quenched in oil, there is serious danger, unless it is a very thin section, that the time of cooling will be so prolonged as to miss the correct state of crystallization of the steel. If a tool is intricate, or of an extremely thin section, and it is desired on this account to harden it in oil, the steel maker should always be informed. He will then make

a steel of such a nature that there will be a wider range of temperature in which the steel can lose heat while being quenched, without missing the proper hardening conditions."

* * *

Making Dairen Premier Coal Port

FOLLOWING the lead of the Toyo Kisen Kaisha, the Osaka Shosen Kaisha has decided to make Dairen a port of regular call for its steamers on the Tacoma line, and European routes. Dairen is thus becoming an important shipping centre due to the efforts of the South Manchurian railroad company in improving the harbor and supplying coal at a specially reduced rate to vessels calling at the port. The accommodating capacity of the harbor is at present approximately 5,000,000 tons, but is expected to be enlarged to 10,000,000 tons in the near future. Price of coal supplied by the company to vessels calling at Dairen is about 5 or 6 yen per ton less than the rate at Nagasaki, so that a steamer consuming about 3,000 tons coal in a single voyage can save about Y.15,000 or Y.20,000 by taking coal at Dairen. Unless the price of coal at Nagasaki is reduced to the same level as at Dairen, and more facilities are given to steamers calling at the port, other steamers, including the liners of the Nippon Yusen Kaisha, may prefer Dairen to Nagasaki as a coaling port. The Mitsui Bussan Company was the first to make Dairen the starting point of its steamers running on the company's New York line. Now that the Toyo Kisen and the Osaka Shosen have decided to make Dairen as the port of regular call, a freight competition is anticipated to arise in the future.

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That Boycott Fizzle

IN the excellent company of our morning contemporary, the *China Press*, when the 1919 trade statistics were issued we drew attention to the manifest failure of the anti-Japanese boycott. There was, of course, injury to Japanese trade; individual firms suffered, Chinese merchants were embarrassed; but the boycott failed to achieve the wicked purpose intended. John is far too sensible to permit bile to interfere with business. He continued doing business with his Japanese business friends and this very fact should serve notice upon the prejudiced minority that Japanese business in China rests upon a substantial and safe foundation.

The Manchester (Eng.) *Daily Dispatch* for November 4, 1920, contains the following enlightening item :—

"Some interesting references to Japan's cotton trade with China during 1919 are given in Messrs. No.1, Murray and Company's piece goods circular, just to hand. The reports, which are extracted from official information, deal with the traffic of the Yangtze Ports, and in general a remarkable increase has taken place in the imports of cotton goods from Japan.

"Regarding Hankow, which may be taken as a representative port, it is stated :—

"A feature of the year, as has been the case for a good many years past, was the increase in the Japanese trade, not only in greys, but also in whites and blacks—more especially Italians.

"In catering for the China market Japan has many points in favor, among which the principal are lower manufacturing costs generally, rapidity of communication, and quickness of shipment, the latter of which becomes of vital importance to the dealer who does not desire to gamble to an excessive degree when exchange is fluctuating violently and a heavy penalty is demanded for forward fixtures. Although not equal to the English goods the Jap article is comparatively cheap, and it readily finds a market in these days of high values.

"In white shirtings to this port Japan supplied 238,671 pieces against 45,516 in 1918. Grey shirtings, English-made cloths, show an advance of 28,376 pieces, while total imports from all countries show an increase of 545,407 pieces, mainly due to Japanese importations, which figure at 743,632 pieces.

"In heavier drills (12¾-lb. and over), Japanese qualities rose from 65,072 to 101,221 pieces; T-cloths from 29,810 pieces to 38,915 pieces; Turkey reds, cambrics, and shirtings from 22,468 to 45,932 pieces. In cotton flannels nearly 79 per cent. of the total quantity was imported from Japan. Of the 73,175 pieces of cotton yarn imported, 68,954 came from Japan.

"Regarding the prospects of the Shanghai market, the circular is somewhat pessimistic. Fears are expressed regarding the famine in North China, which is expected to have an adverse effect on cotton goods for a long time to come. The tightness of money is another factor retarding business."

Coming from Cottonopolis, where business is business, there are numerous indications of lively Lancashire interest in the new phases of China cotton trade conditions. Manchester, Liverpool, Oldham, Ashton, Bolton and Blackburn are carefully scanning the Far Eastern field. The proposed commission of inquiry has not been dropped. We learn from the *Textile Mercury* (November 6, 1920) that

"Although the suggested commercial mission to China and the Far East, on lines similar to the one so successfully undertaken by the Blackburn Chamber of Commerce several years ago, has been deferred, there is official assurance that the project has not been abandoned. The general feeling is that with events so disturbed at home and abroad, it would be unwise to press for the mission in the immediate future inasmuch as the observations of the commissioners would be based on abnormal conditions. Our correspondent was informed that steps would be taken to organize the visit next year (1921), and that arrangements with this end in view were already being made. The importance of such a mission is endorsed by the whole Lancashire trading community and also by the government departments."

The British commercial community in China will be certain to give the mission a worthy welcome.

* * *

Japan, Now, the Largest Manufacturer of China

"JAPAN has taken the place of Germany as the largest manufacturer of china," according to D. L. James, of T. M. James & Sons, Trenton, N. J. "Befoe the war Germany led the world in the manufacture of china, but the war crippled industries of that country to such an extent that Japan forged ahead.

"Although the output of England is not so large as that of Japan, the quality of English china is the finest in the world," he continued. "This superiority is due to the fact that in the leading factories of England bone is mixed with clay.

"The English bone process was discovered a hundred years ago. Bone-made china not only has a finer lustre but is more durable. Of course there are many factories in England which make earthenware and do not attempt to produce china."

* * *

Financial Disturbance in Japan Over

MR. Inouye, governor of the Bank of Japan, reviewing the economic situation, says that Japanese financial disturbances have now practically subsided. The Bank of Japan's loans which had erstwhile been Y.500,000,000 have now been reduced to Y.100,000,000. The issue of notes has likewise been reduced. Nevertheless it was premature to conclude that a period of activity had recommenced. The incomes of those on salaries and of wage-earners has not materially diminished. On the other hand employees of companies affected by the slump and farmers faced with low prices for rice and raw silk must reduce their standard of living sooner or later. Therefore, the purchasing power was bound to diminish, causing a falling off in retail prices. All these things point to a continuance of quietness for some time to come.

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Sir Arthur Yapp is visiting India. As Sir John Foster Fraser would say, here is a fine opportunity for one of Mr. Hearst's bright young men to "discover" the Columbus of Yap island.

* * *

Says the New York *Times* : "Of what use is it to shut out the Chinaman if you let in his peanuts ?"

* * *

According to some American papers Mr. Frank A. Vanderlip is prominently mentioned as Mr. Harding's choice for Secretary of the Treasury. It would be a great thing for the stabilization of international commonsense if Mr. Vanderlip could be made Secretary of State.—Japan *Times*.

The Origin of China's Modern Troubles

By George Bronson Rea

SIR John Jordan tells us that nearly all of the trouble that has arisen in China since 1895 was due to Li Hung-chang's diplomacy. Then, it was, as Sir John reminds us, that Li came under "the imperialist influences of Germany and Russia." The visit to Moscow of the mandarin marquis and the secret treaty of 1896 are deemed by the most distinguished British "Old China Hand" the sources from which have come most of the modern political woes of China.

The Russo-Chinese secret alliance of 1896 is the most vital fact in the modern history of China and it proved the decisive fact in the modern history of Russia. It brought about the Russo-Japanese war and that war caused the first Duma revolution which sowed the seeds that were ultimately to raise Russia's red crop of Bolshevism—the sanguinary harvest of 1917.

Dr. E. J. Dillon in his *Eclipse of Russia* gave us the inside story of the triple alliance against Japan; the Russo-French-German combination of 1895 that revised the terms of the treaty of Shimonoseki and compelled the retrocession of the Liaotung littoral. At Paris, in 1919, Mr. Sazanof, president of the Russian council of ministers, disclosed to the supreme council of the peace conference the text of the alliance signed at Moscow in 1896 by the Marquis Li and Prince Lobanof-Rostofsky, who was at that time foreign minister to the newly-crowned Czar Nicholas. The English translation of this historic document is reproduced here for the benefit of serious, impartial students of Far Eastern problems. Its basic importance will be recognized at a glance.

While British, French, German and Japanese diplomats were well-informed as to the existence of this alliance—reference was made to it in European state papers and the London *Daily Telegraph* printed a version of it in 1910—it was not until the spring of 1919 that it was formally admitted by Russia. China has never acknowledged or repudiated it. On May 17, 1919, the Russians in Paris, through the medium of Mr. Sazanof, entered a formal caveat against revision of any of the Russo-Chinese commitments, presumably including the Moscow bargain. On October 11, 1920, Foreign Minister Yen of China declared that the Chinese treaties with Russia have not been abrogated. The statement of Dr. C. C. Wang regarding the Chinese Eastern Railway is additional testimony that the Chinese respect Mr. Sazanof's caveat and do not intend to take advantage of Russia's present weakness.

It is a pathetic commentary upon the efficiency of the American state department that up to the present moment the fact of the alliance has not been admitted. Quite recently the department clung to the view that "the asserted alliance" was "the spurious Cassini convention" and that "the Cassini convention was a combination of the Russo-Chinese railway agreement and a secret treaty prepared by Russia but unsigned by China." The department was not well informed. President Wilson apparently re-

HIS EXCELLENCY LI HUNG-CHANG,
Grand Secretary of State, Viceroy of Chihli, etc. etc.

TEXT OF THE (LI-LOBANOF) RUSSO-CHINESE ALLIANCE—While attending the coronation ceremonies of Emperor Nicholas at Moscow, in May, 1896, Li Hung-chang concluded with the Russian Minister for Foreign Affairs (Prince Lobanof-Rostofsky) a secret treaty of alliance. The following is an English translation of the French text:—

"ARTICLE I.—Every aggression directed by Japan, whether against Russian territory in Eastern Asia, or against the territory of China or that of Korea, shall be regarded as necessarily bringing about the immediate application of the present treaty.

"In this case the two High Contracting Parties engage to support each other reciprocally by all the land and sea forces of which they can dispose at that moment, and to assist each other as much as possible for the victualling of their respective forces.

"ARTICLE II.—As soon as the two High Contracting Parties shall be engaged in common action no treaty of peace with the adverse party can be concluded by one of them without the assent of the other.

"ARTICLE III.—During the military operations all the ports of China shall, in case of necessity, be open to Russian warships, which shall find there on the part of the Chinese authorities all the assistance of which they may stand in need.

"ARTICLE IV.—In order to facilitate the access of the Russian land troops to the menaced points, and to ensure their means of subsistence, the the Chinese government consents to the construction of a railway line across the Chinese province of Amour (i.e., Heilungkiang) and of Guirin (Kirin) in the direction of Vladivostok. The junction of this railway with the Russian railway shall not serve as a pretext for any encroachment on Chinese territory nor for any infringement of the rights of sovereignty of his Majesty the Emperor of China. The construction and exploitation of this railway shall be accorded to the Russo-Chinese Bank, and the clauses of the Contract which shall be concluded for this purpose shall be duly discussed between the Chinese Minister in St. Petersburg and the Russo-Chinese Bank.

"ARTICLE V.—It is understood that in time of war, as indicated in Article I, Russia shall have the free use of the railway mentioned in Article IV, for the transport and provisioning of her troops. In time of peace Russia shall have the same right for the transit of her troops and stores with stoppages, which shall not be justified by any other motive than the needs of the transport service.

"ARTICLE VI.—The present treaty shall come into force on the day when the contract stipulated in Article IV, shall have been confirmed by his Majesty the Emperor of China. It shall have from then force and value for a period of fifteen years. Six months before the expiration of this term the two High Contracting Parties shall deliberate concerning the prolongation of this treaty."—From *America's Aims and Asia's Aspirations*, pp. 456—7.

frained from taking even the responsible officials into his confidence. The Russian secret was well kept. It never got between the covers of a book until the Century Co. published the Far Eastern history of the peace conference by the editor of THE FAR EASTERN REVIEW. Yet, knowledge of this instrument changes the whole force of modern Far Eastern history. Here are the facts in brief:

> The United States contracted with Korea (along the lines of previous treaties with China and Japan) to befriend her in her relations with the other powers;
>
> China successfully vetoed Korea's attempt to hold direct relations with the United States;
>
> China and Japan waged war over Korea, Japan won the war and China ceded the Liaotung littoral, etc., and surrendered her Korean protectorate;
>
> Russia headed the tripartite combination against Japan and compelled Japan to relinquish the Liaotung littoral;
>
> The Li-Lobanof (Moscow) alliance between Russia and China against Japan and England;
>
> The consequent alienation of all the chief northern ports of China, Germany seizing Kiaochau in compensation for Russia's acquisition of the Liaotung region;
>
> The American occupation of the Philippines, a compulsory, accidental, but none the less complete reversal of previous American Asiatic policy;
>
> The Hay "Open Door" circulars accepted and nullified by contrary secret agreements;
>
> Japan seeks an alliance with China, Peking is prevented from entertaining Japan's proposals by all the western powers (including the United States);
>
> The Boxer war and Russian occupation of Manchuria;
>
> Russia, at the personal instigation of Emperor William, advances to take Korea, completion of the tran-Siberian railway and formation of the Yalu Timber (Bobradanof) Co.;
>
> Japan (through Baron Rosen) seeks an amicable understanding with Russia;
>
> The Anglo-Japanese Alliance (the British and Japanese answer to the Li-Lobanof Alliance);
>
> The Russo-Japanese war and the treaty of Portsmouth, with its Rockhill-Roosevelt clauses attempting to save Manchuria to China;
>
> Application of the Ito-Motono policy which adjusted Russo-Japanese differences on the old principle of "dividing the spoils."

The more recent facts are fairly well known and understood. They take on a different appearance when considered as the consequences of the facts here epitomized.

The key to the Chinese political puzzle has been the Li-Lobanof Alliance. The secret diplomacy of Li, Count Cassini and the subtle old masters of the "Singers' Bridge" compelled England and Japan to act in defense of their Far Eastern interests. A careful reading of the provocative correspondence carried on by Emperor William with Czar Nicholas justifies each and all of the steps that were taken by the London foreign office and the elder statesmen of Nippon. It proves positively that from first to last the policy of the "Open Door" was doomed to disappointment and to defeat.

Mr. Hay was not deceived. Mr. Choate was not deceived. Among the most interesting and instructive documents in the archives of the American government are the confidential notes and memoranda exchanged by Hay and Choate while the "Open Door" was being painted and varnished to suit the harsh extremities cold-bloodedly created by secret, old diplomacy. Choate shut himself up in his study, one evening, and wrote a remarkable summary of the actual situation. He sensed the existence of the Li-Lobanof bond. He wrote just as he felt and some of the things that he put on paper in his bold, flowing hand would have played the very devil with "the concert of Europe." Hay wrote to Adams:

> "We cannot publish all the documents without breaking off relations with several powers."

Many years later, during his brief period of retirement, Choate told the whole story to the editor of THE FAR EASTERN REVIEW, who had studied the correspondence and enjoyed the ambassador's plain language about Nicholas and William. Lord Salisbury, Lord Lansdowne and Mr. (afterwards Lord) Bertie did all that was humanly possible to meet the wishes of Hay and McKinley. American policies, however, could not and did not meet the rude necessities of the case. So the "Open Door" became the worst jest of modern international relations, and American policy in the Far East "came the cropper" that Hay, himself, had predicted in letters to Henry Adams and Henry White.

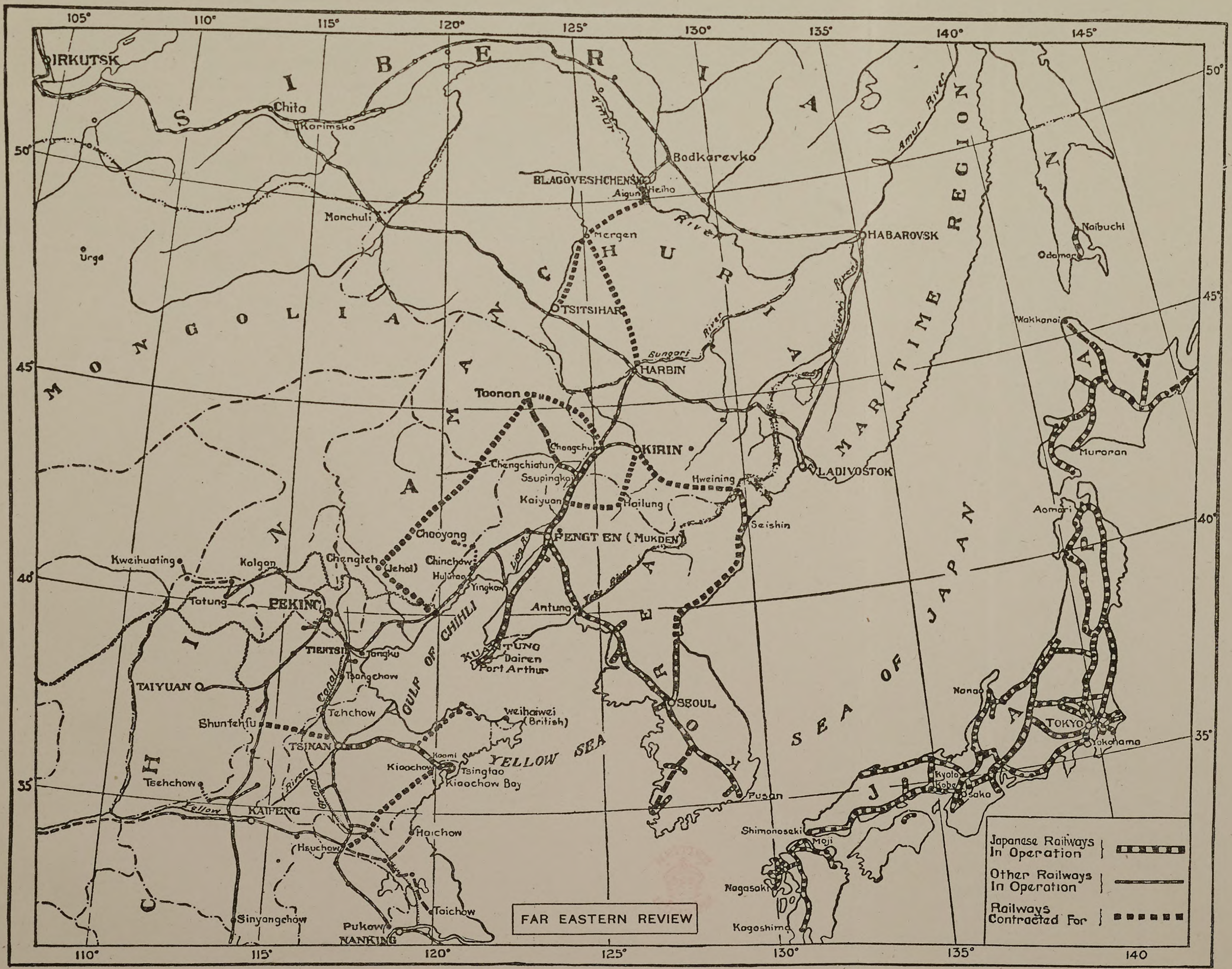
It is high time that the real friends of China take full cognizance of the Li-Lobanof Alliance and do justice to that sound British diplomacy which has met realities with practical efficiency. While American Far Eastern officials have insisted upon living in a false atmosphere of sentimental tommyrot, closing their minds against

COUNT CASSINI

Who, as Russian Minister at Peking, exercised a Dominant Influence upon Li Hung-chang

facts and romancing about an "Open Door" that never actually existed, the British have gone about their Far Eastern business skilfully and successfully. It was in an earnest effort to brush away the cobwebs and unveil that truth that the publisher of THE FAR EASTERN REVIEW printed last year for private circulation among those interested a monograph entitled *The Breakdown of American Diplomacy in the Far East.* The "breakdown" was obvious to all who attended the Paris conference. It was due to ignorance, to stubbornness and to the wilful perversity of a few men who abrogated to themselves the power to twist American policies to suit pet schemes and preconceived prejudices.

Unless her people will it, China need not be bound to the chariot wheels of the Li-Lobanof anti-Japanese and anti-British policy. The people of China can say that they were not consulted in the matter by Li or his imperial mistress, Tzu Hsi. In which direction do they seek the salvation of China? As an ally of peace or as a provocation towards a future war? If the *Waichiaopu* has nothing better to offer China than the manners and methods of the old *Tsungli-yamên* then nothing is more certain than that China's future is chockful of dangers for herself and for all the powers. If Dr. Yen's policy repudiates the rotten old legacy of the Li-Lobanof



MAP OF NORTH CHINA

showing the railways contracted for with Japanese financiers, as well as the lines contracted for with the Russo-Asiatic Bank, in northern Manchuria.

A study of this map will disclose the true significance of the proposed Japanese railways in Manchuria and Inner Mongolia. Instead of being aimed at Peking and the domination of north China, they are purely strategic lines, the outer defenses of Japan against the advance of Russia from her preponderating superior positions on the north and west. The projected lines from the sea at the Korean border to Kirin, Changchun and Taonan, mark the northern line of defense. The strip between these lines and the Chinese Eastern railway is neutral ground, the no-man's land between the two fronts. When Russia extended her "protection" to Mongolia in 1912 and provided her armies with a free access to Japan's exposed western front, the latter was compelled in self-defense, to demand the rights to the railway from Taonan to Jehol. The Japanese subsequently advanced funds for the Peking-Kalgan-Tatung line, which brings this also under their influence. The lines from Harbin and Tsitsihar to Blagoveshchensk represent the Russian strategic lines conceded in 1916 by China to the Russo-Asiatic Bank, compelling Japan to strengthen her position in the south.

The weakness and inability of China to protect her capital and northern approaches from a Russian advance, compels Japan to step into the breach for her own security. The projected railways are therefore not only essential for the protection of Japan's position, but imperative for the defense of China. They should be constructed at once, and jointly defended for the common interests, and, as the first move to a deeper penetration of Mongolia that will open up this vast empire to colonization by the yellow race.

This map will also show the compelling motive behind Japan's entrance into the war. An Allied victory, with Japan on the outside, would have given to Russia the rights held by Germany. The Russian strategic railway system would have debouched upon Shantung from the Shuntehfu-Tsinan line to Tsingtao, while the Central Asian trunk line would have followed the Hsuchow-Kaomi project to the same deep water terminus. Russia would have dominated Shantung. Japan would be surrounded on all sides by the strategic railways of her dreaded enemy, and in time, would have had to bow to the inevitable and withdraw from the mainland, or make her last stand for national existence in Southern Manchuria or Korea.

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alliance now would be the best possible time for China's foreign minister to make that point clear. How about this, Dr. Yen ?

Every important move made by Great Britain in China since 1895 has been one of self-defense, a constant struggle to outwit *secret* Russian manœuvres by *open* moves and to preserve her own Asiatic empire. In the same way, every move made by Japan in Asia has been dictated by the law of self-preservation—the determination of a nation of men to safeguard their own empire, constantly jeopardized by the Li-Lobanof alliance.

To vindicate the truth, and in hearty appreciation of the manly frankness of Sir John Jordan--a real friend of the Chinese people—the following extracts are reprinted from the monograph above-mentioned, *The Breakdown of American Diplomacy in the Far East* :—

The Problem of Asia

"Approach as near as possible to Constantinople and India. He who establishes himself in these two places will be true sovereign of the world." These are not the words of a German strategist, but the legacy of advice that Peter the Great bequeathed to his successors ; a legacy that was followed out to the letter.

"The more powerful Russia becomes in Central Asia, the weaker does England become in India, and, consequently, the more amenable in Europe," said General Sobolev. Russia attempted no concealment of her real aim. India was, and still is, to Russians, the land of fabulous wealth.

"India, is the key-stone of the British Empire ; without India, the Empire would cease to exist. British policy in Asia must be moulded from the standpoint of its effect on the preservation of British domination in India. . . The concession of a port upon the Persian Gulf to Russia by any Power, should be regarded as a deliberate insult to Great Britain ; as a wanton rupture of the *status quo*, and as an intentional provocation to war ; and he should impeach the British Minister, who was guilty of acquiescing in such a surrender, as a traitor to his country," said Lord Curzon, the greatest of England's Indian Viceroys.

In these two quotations, the problem of Asia is laid before us ; Russia's open determination to conquer India, and Britain's firm resolve to defend her possessions. The present generation forgets that twenty, thirty years ago, Russia was the menace to world peace. Russia was then running amuck throughout Asia, slaughtering, devastating and annexing the remnants of the older civilizations. The Caucasus and Trans-Caspia were conquered, Merv was annexed and the legions of the Czar were at the Gates of Herat, the outwork of India. With Askabad as a centre, a network of Russian intrigue was spread over southern Persia to establish the Czar's supremacy on the Persian Gulf and the Indian Ocean through means of a railway. "In order to be there before the Germans," they said. Her right to such concession became an article of faith on the banks of the Neva, and was soon evolved into a sort of bureaucratic Monroe Doctrine. Northern Persia was brought under the influence of the Czar through the completion of the Trans-Caspian railway.

"Every kingdom, principality, or tribe to which Russia has extended 'protection,' has eventually been appropriated into the Muscovite Empire. Russia has seldom, if ever, permanently retreated from any spot where her authority has been established." Where her flag is once raised, it stays, unless hauled down by superior force. "The clue to her success is the intelligent ruthlessness of Russian warfare, when warfare must be waged. When she sends out a punitive expedition, no mercy is shown, even women and children being sacrificed in order to further her aim of a complete subjection. Skobeleff sounded the key-note of Russian policy, when he said "my system is this—to strike hard and keep on hitting until resistance is completely over ; then at once to form ranks, cease slaughter, and be kind and humane to the prostrate enemy. By this system, Russia has absorbed more territory, assimilated a greater number of different peoples, and fought more border wars than any other modern nation, and in the whole course of her ceaseless march there has never been a single uprising against her authority once that authority has been established. Russia's methods of warfare, her showy Asiatic magnificence, her iron hand under the velvet glove, impress the Asiatic. Her methods of wholesale slaughter which broke the spirit of Central Asia is claimed by Russians to be cheaper, quicker and more effective, and in the end, the most humane."

By this system, the Russian military juggernaut crushed out the life of the little peoples of Asia, as the first step toward the conquest of India. Only the most determined moves on the part of England halted the Bear at the Afghan frontier and prevented Persia from being absorbed, and India flanked on its most vulnerable side.

Checked temporarily in this direction, the Russians swung rounds into the Pamirs. The Hindu Kush, the natural boundary of India, was proclaimed as the frontiers of Russia in Central Asia. Chinese Turkestan was brought under the influence of the Czar ; the Ili district remains Chinese in name only. Russian agents invaded Tibet. Military exploring parties disguised as scientific expeditions swarmed over the Roof of the World mapping out the passes in the Himalayan wall through which the hordes of Russia could sweep down into the Garden of India. Britain was compelled to annex Sikkim, and, when the emissaries of the Czar won over the Dalai Lama, was again forced to act. The Younghusband expedition was the result, and Tibet forever lost to China.

Russia's direct advance on India was halted, and once more she started to clear the trail for another flank movement. Japan was deprived of the fruits of her victory over the Chinese ; the traditional enemies of England standing solidly together to further the designs of Russia.

The secret Li-Lobanof alliance entered into in 1895, following the Shimonoseki Treaty and the Imperial Rescript surrendering Japan's position in Liaotung, was the starting point of China's troubles. It was an open payment by China to Russia for compelling Japan to forego the fruits of her victory. It was China's revenge. She opened her doors to the armies of the Czar and paved the way for the subjugation of Japan. Not only did China consent to the leasing of *Kiaochao* to Russia as a naval base, but the undisputed possession of Port Arthur and Talienwan (Dalny) in the event that Russia became engaged in hostilities with any other Power. There was only one interpretation to be placed on these moves. Japan was to be crushed ; punished for daring to interfere with Russia's self-imposed monopoly of subjugating the peoples of the Asiatic mainland. Russia's breach-of-faith with her German partner in the matter of the Russo-Chinese Bank, determined the latter to forestall her in Kiaochao. China would have gladly handed over this important harbor and potential naval base to her great and good friend, Russia, in order to facilitate the latter's attack upon Japan and gratify her desire for revenge. Germany's prompt and dramatic move in stealing a march on her perfidious Ally obtained for her the 99-year leasehold on this coveted strategical position. In our haste to condemn Germany and throw stones at Japan let us not forget this initial compact between China and Russia which compelled the other Powers to move at once to protect themselves. It may be true China had a perfect right to cede her possessions to Russia, but when the exercise of this prerogative becomes a direct menace to the political existence of her neighbors, it may be indulged in only at the peril of immediate reprisals. Mexico, in the full enjoyment of her sovereign powers, may be justified in ceding a naval station to a foreign nation in some of the Lower Californian bays. The Central or South American States may, with equal right, convey similar privileges that might become a strategic menace to the American defense of the Panama Canal, but no explanation these governments could give, would deter the United States from placing a peremptory veto on the transfer and of exacting compensatory damages and guarantees for their future good-behavior.

For over a century, the full weight of Britain's diplomacy, and at times, her military and naval power, had been exerted in blocking Russia's designs to oust her from India and obtain an ice-free

port on the coasts of Asia. Yet here was China, smarting under her humiliation at the hands of Japan, gleefully handing over her three choicest ports in North China to the dreaded and avowed enemy of England. Experience had taught England that when Russia moved in Asia, it behooved her to act quickly. Japan could do nothing. The coalition against her was too powerful. She could only sit by and watch the preparations being made for her funeral. Her only friend was England, whose vital interests were also placed in jeopardy by the folly of China. This fundamental truth must never be lost sight of in attempting to understand the subsequent moves of the Powers in China. This is the beginning; the key to the puzzle.

Great Britain had declared that any Power which conceded Russia's right to a port on the Persian Gulf, would be considered as an enemy. Britain would go to war immediately to protect this strategical approach to India from its weakest and most vulnerable side. Russia on the Persian Gulf, or in the Pacific, meant that the day must come when England would have to fight for the existence of her Empire. When China opened her doors and brought Russia down to the warm-water ports of the Yellow Sea, she placed herself on the side of England's enemy. She became an active ally of Russia.

When Russia moved, her French Ally moved with her. The treaties amply prove that there existed a decided tendency to create and preserve preferred spheres in other parts of China before Germany applied the "Mailed Fist" at Kiaochao. Britain was entrenched at Hongkong. The French non-alienation agreement covering Hainan of March, 1897, was only the corollary of her Ally's moves in the North. China was caught in the Franco-Russian trap, which caused Great Britain to demand the non-alienation declaration creating the Yangtze Valley sphere in February, 1898. It has been urged that the declared intention of Germany to demand Kiaochao, precipitated the British move in the Yangtze. If we can visualize the great struggle being waged at that time with India for the prize, and the elimination of England from Asia, the picture will disclose that when China gave her two best northern harbors to Russia, and France obtained recognition of her position in Hainan, Hongkong was placed between England's two most powerful enemies. "It is from jealousy of India and to impair the position which India gives to Great Britain in the Far East that France has again embarked upon an Asiatic career, and is advancing from the south-east with steps that faithfully correspond with Russia upon the north-west," wrote Lord Curzon in 1900. The precedent for the creation of spheres of influence was therefore created by France several months before the German missionaries were murdered in Shantung. When Germany obtained Kiaochao, France followed by exacting from China a further non-alienation agreement covering South China. Eight days later (April 18, 1898), Great Britain supported Germany's rights in Shantung by renouncing all intention of connecting Weihaiwei by railway with the Shantung hinterland, thus conceding to Germany a monopoly in the exploitation of that province. The week following, after all the other Great Powers had delimited their strategical positions, Japan, supported by Great Britain, obtained the non-alienation declaration embracing the province of Fukien, which not only protected her position in the Island of Formosa, but interposed an additional buffer between Russia on the north and France on the south. On June 9, Great Britain demanded and obtained the lease to the Kowloon Territory. The inability of China to defend her neutrality, compelled Great Britain to exact this lease as the only protection to Hongkong against a land bombardment in the event of hostilities. On July 1, she obtained the lease to Weihaiwei, where her fleet had been anchored since Russia swaggered into Port Arthur across the strait. Keep in mind the fundamental facts about Russia and the subsequent events are entirely comprehensible.

Russia was then teaching the world a new lesson. "By her forethought, energy and fertility of resource, she led the way and taught the Powers how to conquer by railways. She alone recognized how much more valuable are communications than mere army corps; how necessary in a nation's affairs is a fixed plan. Russian railways, made by Russians for Russia, ran straight across Asia from Moscow to the China Sea, from Batoum through Trans-Caspia to the western gates of the Chinese Empire, and to the Herat province—the key of Afghanistan and the outwork of India. Both in the Far East and Central Asia, the Russian railways are to be gradually carried further south—through China to the Yangtze Valley, and through Persia to the Indian Ocean. At the same time, she is pushing her feeder lines southward into Europe's sphere of influence to gain a commanding influence in Turkey and Persia. The old idea of a direct invasion of India has been for the time being, at least, abandoned, and in its stead, the plan has been adopted of commanding Central Asia, Persia and Afghanistan by means of railways and of **reaching India's north-eastern frontier by way of China.** Wherever Russia can develop cultivation she will provide storehouses for the time when she wishes to introduce an invading army. When she can develop her railway systems, she will have the means of transport ready to hand. She aims at re-creating the fertility of the Central Asian steppes and thus forming fresh bases for further advances." Thus wrote Archibald Colquhoun in 1900.

Russia did nothing by halves; she worked on a big scale with fixed objects in view. "Run back over Russia's far-sighted and patient policy, which has always looked ahead and considered the needs of the Russian people a century beyond the present moment, and perhaps an explanation will spring from these combined considerations." Halted on all sides by the swift and certain strokes of British diplomacy backed by a naval supremacy that no one Power or coalition of Powers dared to question, she resorted to subterfuge to accomplish what could not be done openly.

Once again Britain scored by binding Russia through the Scott-Muravieff agreement to confine her activities north of the Great Wall of China, and again, Russia broke her pledged word by employing Belgium, operating with the financial support of France, to extend her tentacles toward south China, and the coveted north-east borders of India. "It has been abundantly proven that Russia's pledges were given merely as a matter of diplomatic expediency to be broken whenever convenient." Her policy was to take advantage of the slightest opportunity offered. Merv was annexed when England was busy in the Soudan; the Central Asian railway was pushed up to the borders of Afghanistan. Tibet nearly fell into her maw during the Boer war. Manchuria was occupied during the Boxer troubles, and Mongolia declared independent when China was in the throes of a revolution. Russia never overlooked a trick.

When Russia moved in Asia, France, her Ally, moved with her. France was helpless, bound to Russia's chariot by chains of gold. "Between the French Republic and the Russian Autocracy exist the most perfect and smoothly working governmental and diplomatic understanding of modern times. It is a singular illustration of the influence of hatred and interest in making a combination between two peoples unlike in temperament, ideas and methods. Their alliance was born of their common fear and hatred of Germany and England—of the numerous conflicts of German and English interests with Russian and French interests. And so, in their foreign policy, and particularly in their Oriental diplomacy, they might almost be said to work as one government. So far as the rest of the world is concerned, French diplomatic agents in Asia operate in understanding with Russia; and the reverse is also true." These are the words of Senator Albert J. Beveridge in his book on the "Russian Advance" written in 1903. Every mile of Russian railways in Asia was built with French money; when Belgium entered the Chinese field on behalf of Russia, French capital subscribed to eighty per cent. of the loan issues.

So, when England, fighting for the life of her Empire, called checkmate time and again to Russia's moves on the diplomatic chess-board, the latter turned to little Belgium to play her game secretly. Russia's program was to divide China in half by a north and south railway that would link her Manchurian and projected Monogolian systems with the lines of her French Ally on the south,

POLITICAL RAILWAY MAP OF CHINA

This map was printed by THE FAR EASTERN REVIEW, in 1914, to illustrate the political and strategical significance of the Russo-Belgo-Franco railway contracts, which divided China by a north and south and east and west trunk system, permitting Russia to join hands with her French Ally on the south and opening up a deep water port at Tungchow for the Lung-Tsing-U-Hai (Central Asian) line. This map also gives a clear idea of the meaning of the Japanese lines in Manchuria, which are shown to be purely strategic frontiers against the pressure of Russia. The map will again help to an understanding of what an Allied victory, with Japan on the outside, would have meant. The entire Russo-Belgo system in North China would have found its outlet to deep water over the German lines, and Japan would have been surrounded on all sides by Russia. To avoid such a possibility, Japan had no alternative other than tc attack Germany at once, without delay, or assistance from her Ally. She could take no chances of having Russia demanding the right to co-operate in the Tsingtao campaign and participating in the fruits of victory. As long as the Belgian concessions are held binding with their undoubted Russian political connection, Japan cannot relinquish the right to partial control over the German railway concession, which, under complete Chinese control, would be hypothecated without delay to some agent of Russia, in the same manner that they handed over the Kalgan line to a Belgian syndicate operating as part of the official Russian Group.

The dotted lines . . . . . in south-west China indicate the extent of the South-western Trunk System that was offered to the American Group in 1913 by the Deputy Director-General of the Chinese National Railway Corporation, holding the power of attorney, Dr. Sun Yat-sen, and which was rejected. At that time, these lines did not conflict with the rights of any other Powers. They were free from international political complications, and would have provided an outlet for American capital and industries equal to, if not greater, than any of the European Powers. This was the last opportunity presented to American capital to acquire Chinese railway rights that would have brought them in on "the ground floor" without international complications.

and so bring their armies nearer to the coveted north-eastern frontiers of India. A Belgian syndicate backed by French capital and in partnership with the Russo-Chinese Bank, obtained the great Peking-Hankow railway concession after the Chinese had solemnly promised Great Britain that Russia would not be admitted to participation in the deal. At the same time the Russian combination acquired the rights to the Chengtai and Pienlo railways, as the first links in other grandoise schemes for the subjugation of China. Again China willfully played the Russian game and brought her another lap nearer her goal, and, once more, Britain countered and compelled China, under threat of an ultimatum, to concede compensatory damages, that would enable her to hold her strategic position in central China against the onward march of the Bear. The set determination to maintain at all costs her strategic position is disclosed in the curt, concise instructions to the British Minister at Peking when the truth was learned as to the Russian participation in the Belgian concession. "You are authorized to inform the *Tsungli yamên*, that unless they agree at once (to the demands for compensatory railway rights) we shall regard their breach-of-faith concerning the Peking-Hankow Railway as an act of deliberate hostility against this country, and shall act accordingly. After consultation with the Admiral, you may give them the number of days or hours you may think proper within which to send their reply." There was no trade policy in such a note. It breathes the spirit of a government grimly determined to resort to instant hostilities against the deceitful action of China in opening her doors to the enemies of England in order to facilitate their advance upon India. This is the reason underlying Britain's demand for recognition of her predominance in the Yangtze Valley. It is her one bulwark against the slow, cunning, moves of Russia to oust her from India by an attack through the territories of China. As China cannot defend herself or preserve her neutrality and guarantee the British Empire from attack, her territory becomes the strategic frontiers of India ; England must dig herself in, in the Yangtze regions.

Once more England called check by placing the Yangtze valley between India and the Colossus of the North. Then the Americans broke into the field and thwarted her well laid plans. The American-China Development Company, holding the concession for the southern half of the great north and south trunk railway from Hankow to Canton, permitted the Belgians to obtain control of its stock in the open market, and were about to step aside and hand over the administrative control. Russia almost attained her object. Her Belgian agent controlled the line from Peking to Hankow, and the Americans made them a present of the southern half to Canton. Is it any wonder that the campaign was initiated to oust the Americans, and the British press clamored for the surrender of the concession ? Once again, the British position was menaced, and again, by heroic diplomatic teamwork, they obtained a hard and fast option on the rights to this line ; a right they have not sacrificed in its internationalization under the Hukwang Loan.

While her Ally and Agent were carrying her plans into execution in prohibited spheres, Russia was playing an energetic game of her own in the north. The Boxer uprising provided her with opportunity to flood Manchuria with troops and entrench herself. Harbin rose like a boom town on the broad expanse of the Manchurian prairies and became the Far Eastern capital of the Czar, the strongest military encampment of Eastern Asia ; Port Arthur was hurriedly transformed into an impregnable naval base and the city of Dalny created over night like an Arabian Night's Dream ? When the Allied Powers were negotiating the Boxer terms, Russia, working independently, was forcing China to sign a separate secret treaty which would have clinched her domination over Manchuria and prohibited China from constructing railways in any of her provinces bordering on the domains of Russia ? Again England had to act quickly to save the situation. This time (October 6, 1900) she entered into an alliance or understanding, not with the United States, the champion of the Open Door policy, but with Germany, in which the two countries were to stand together to oppose Russia's covert attempt to take advantage of the situation for selfish ends. Again, China was about to play the Russian game and sign the secret treaty. Only under pressure from the other Powers, did she finally make known the extent of Russia's demands. Backed by their support, she refused to sign and Russia withdrew.

Harassed and beset on all sides in Asia through the activities of the coalition seeking to undermine her position in India, and handicapped through the incompetency and inability of China to protect her territories against the menace from the North, Great Britain threw her fortunes in with Japan, and in 1902 signed an alliance with the rising Oriental Power. This combination of Democracy with an Oriental Autocracy has been severely criticised and condemned, but an impartial study of the diplomatic game in Asia will fully justify its necessity. The gold of Republican France was supplying the motive power for the Autocratic Russian machine in Asia, and, secretly encouraged by Germany, the combination on one side, was bent on absorbing Persia in order to attack India, and on the other, snuffing out thein dependence of Korea as the first step in the throttling of Japan. Britain was isolated. The great White Powers of Europe were combined against her. The instinct of self-preservation threw Britain and Japan together against a common enemy. It may have been an unholy alliance, but from the viewpoint of practical diplomacy it was absolutely justified, and, harp as we may, it stands as the one guarantee of a permanent peace in the Far East, the one formidable check to the never changing policy of Russia, the one safeguard for the defense of the British Empire and the future existence of Japan. Once again, the Open Door doctrine which could not be relied upon to check Russia, had to give way to a more practical instrument of defense. The alliance worked, it accomplished its purpose. Raising her paw from the vantage point presented by China to snuff out the life of Korea, the Russian Bear received the first set-back in her long and bloody career of annexation of little nations. The paw came down upon the upraised bayonets of Nippon. Discomfited, sore, surly and revengeful, Russia withdrew temporarily from South Manchuria to her second line of defense north of the Sungari, still holding her ground within the territory of neutral China.

Japan was compelled to fight for her life. Only by a superhuman effort, a terrible sacrifice of blood and treasure, was her independence assured and the menace hurled back to the frozen fastnesses of the north. Who was to blame ? Japan did not invite the war. She fought China ten years previous, and imposed terms deemed essential for her future protection against aggression, by insisting on the cession of the Liaotung peninsula. Japan followed the same law in imposing terms upon China that has since been followed by the Great Powers in their peace negotiations with Germany. This insurance against attack was denied to her by a coalition headed by Russia intent upon her subjugation. China willingly allied herself with and handed over to Russia what had been denied to Japan, not only as a grateful present for services rendered, but to be revenged upon her late antagonist. Russia lost no time in pushing her advantage. Manchuria was flooded with troops. Harbin, the administrative centre of the railway system, became the Far Eastern military capital of the Czar. From this vantage point, within the confines of China, and from the strongholds of Port Arthur and Dalny, Russia concentrated her energies toward the absorption of Korea and the annihilation of Japan.

Before the Chino-Japanese war in 1895 it may be said that Russia had no army in the East. Not until work began on the Chinese Eastern Railway did her troops begin to pour into Manchuria. The Boxer outbreak in 1900 provided an opportunity and at least 60,000 were marched into the province. In another year this was increased to over 150,000 and during the next three years this number was doubled. China was fully aware that her territory was to become the scene of a terrible war. Russia was manœuvring to extend her influence over Korea. China had gone to war with Japan in 1895 over Korea. She made no move to oppose Russia operating from within her territory. China cared nothing about Korea as long as vengeance was visited upon Japan. Her weakness, venality, duplicity and playing one Power off against the other to save herself, bore its fruit.

And when the terrible sacrifice was completed; when the two armies stood face to face in the bleak desolate regions of the Sungari, far from their bases of supplies; broken and unable to carry on, the line was then delimited which marked their future strategic positions within the neutral territory of China. As long as Russia maintained her position in Northern Manchuria and held Harbin as a base, Japan dared not withdraw. To have retreated and surrendered her strategic footing gained at such a terrible cost, would have again handed over the fruits of victory to Russia. China would have once more opened the flood gates for the armies of the Czar to return to Mukden, Port Arthur and the banks of the Yalu.

Russia held fast to her strategic position in Manchuria and initiated those tremendous preparations for a war of revenge which kept the Far East in a state of inquietude since 1905. Hardly had the ink dried on the Treaty of Portsmouth, when she commenced feverish activities to retrieve her lost prestige and position in Asia. Until Japan was humbled, Russia could no longer safely lord it over the tribes and peoples of Asia. The peace treaty stipulated that the Chinese Eastern Railway, traversing the neutral zone of China, could not be employed for strategic purposes. Vladivostok, the Primordsk, and the Ussuri regions, were thus cut off from direct military contact with the rest of Siberia and Russia. Her eastern strongholds were isolated.

The war had been lost to the armies of the Czar because they tried to fight it at the end of four thousand miles of single-track railway, with their base of supplies in European Russia, and the line of communication broken during the long winter by the frozen expanse of Lake Baikal. Russia set to work to retrieve her mistakes. Huge appropriations were at once made for the construction of the Amur railway that would connect Vladivostok with the rest of the empire through Russian territory. This circumvented the clause in the treaty closing the Chinese Eastern railway for strategic purposes. The Trans-Siberian line was double-tracked. The Circum-Baikal link was completed. Vladivostok was strengthened and made impregnable. The Ussuri region was colonized from southern Russia and the country criss-crossed with military roads. Trans-Baikalia was opened to settlement. Industries were created, agriculture encouraged and everything done to make this region a base of supplies for the forthcoming struggle. Russia was faithfully carrying out the policy so strikingly predicted by Colquhoun several years previous. There was no mistaking the purpose of Russia.

Japan stood amazed at these preparations for revenge. She was almost bankrupted by her struggle, yet compelled at all hazards to keep pace with the activities of Russia. Her armies were increased time and again, she hypothecated her last resources to strengthen her position. This is the sole reason for her militarism; obeying the same law of self-preservation that compels Britain to maintain her naval supremacy and France her military organization. Japan may be a military nation, she may have faithfully copied and admired the German system, but this does not warrant the accusation that she is on conquest bent. If Japan goes to sleep and listens to the siren song of the pacifists, her national existence would not be worth a moment's consideration.

Because of China's inability to defend her own or her neighbor's territory, and the venality of her statesmen who allied their country with and admitted Russia into Manchuria, Japan was compelled to fight one terrible war for independence. To preserve this dearly bought security, she was again forced through the inexorable exigencies of the military situation in Manchuria to violate her pledged word and annex Korea and maintain her strategic foothold within China's territory. Korea borders on the Maritime Provinces of Russia, offering a free and unobstructed passage to the armies of the Czar when again ready to move against Japan. The snuffing out of Korea's independence which constitutes one of the tragedies of recent years, was inevitable. If Japan had not stepped in and annexed the peninsula, nothing would have prevented Russia from seizing the first opportunity to occupy the territory as a base for her operations against Japan. If Japan had meekly given up her position in Manchuria and respected the independence of Korea, she would simply have invited her own subjection; she would have committed *hari-kari*.

"The rights of smaller and weaker nations fade away and disappear when their governments through incompetency, corruption and general ineptitude endanger the life of stronger, better organized and developed states." The national life of Mexico would be snuffed out in a twinkling, if her present disorganized condition was ever employed by Germany or any other Power as the bridge over which our own independence was threatened or attacked. One such lesson is enough for any virile nation. As long as Russia holds Northern Manchuria and the Primordsk, Japan must, in self-defense, dig herself in in the south. It is the punishment that China is now receiving for her double dealing, and the price Korea pays for her continued disorganization and intrigues which invited her absorption by Russia.

Let us return to the chess-board. Russia very naturally attributed her defeat to the strong support tendered to Japan by Great Britain. She bided her time and awaited the opportunity that was sure to come. Then the Americans re-entered the labyrinth of Far Eastern politics by proposing the neutralization of the Manchurian railways, ignoring the tremendous struggle for Empire that was going silently on in the depths of Asia The story of how this was rejected, is fresh in the memory of all. Then, finding someone she could play off against the others, China utilized the Americans to break the hold of Russia and Japan in Manchuria by conceding to the American Group an agreement for financing the Chinchow-Aigun railway. It was a foregone conclusion that it would be blocked, but sympathy for China caused Americans to take over the rights, and, by bringing in a British contractor to construct the line, hoped to win over Great Britain. The line was aimed at Japan's position, and it was hoped that British interests would influence British official support and take the ground from under Japan's opposition.

Who defeated this scheme, which, on its face, was a legitimate enterprise, well within the treaty rights of the United States to undertake and the sovereign power of China to initiate? It was not Japan. Backed by the full weight of French diplomacy, Russia emphatically refused to permit its construction, applying the principle that any Chinese railway that touched or paralleled her boundaries became a strategic menace to her military position. Russia went back to the principle that she tried to force upon China at the time of the Boxer troubles. The Chinchow-Aigun railway opened up a new line of communication from the south aimed at the heart of her Amur region, a highly important military alley that would fall into the hands of Japan at the first sign of renewed hostilities. Under the terms of the Portsmouth Treaty, Russia was prohibited from employing the Chinese Eastern line for military purposes. The new Amur railway then under construction, constituted her only line of communication within her own territory connecting Vladivostok and the Maritime regions with the rest of the Empire. With the Chinese Eastern line closed to military movements, the proposed new Chinchow-Aigun line therefore opened a clear and unobstructed passage for the armies of Nippon to strike at the most vital point in her new line of defense. In the event of Japan reaching the banks of the Amur, the whole Russian Empire east of Baikal would be at her mercy. Naturally, Russia, who thinks only in terms of military strategy, stubbornly refused to budge from her position. Japan was willing enough for the line to be constructed, provided she was permitted to participate, but this was rejected by China and America. It was Russia, and Russia alone, who blocked the concession. She called checkmate to England, and in so doing, established the principle that China cannot construct railways within her own boundaries which might become a strategic menace to her neighbors. The other great Powers did not oppose the imposition of the new doctrine, clearly foreseeing that the time would arrive when, because of the continued weakness of China, they would be compelled to invoke the same principle in defense of their own interests.

Russia then sat back and awaited the next move. This came with the Chinese revolution, providing the ever watchful Bear with another opportunity to shove his paw deep into the Chinese honey-

pot. Mongolia was declared independent and brought under Russian influence. The continued disorganization of the Chinese invited this rape of their territory. The strategic position of Russia was strengthened. The Cossack was brought to the Great Wall and Japan's position in south Manchuria outflanked. The weakness of China was again paving the way to the undoing of Japan. The amputation of Mongolia was simply another strategic move on the great chess-board of Asia which permitted Russia to set at naught the watchful preparations of Japan and facilitate a flank attack on her position from the west and south-west. Russia moved rapidly. No sooner had Mongolia been declared independent, and the Hutuktu and his Lama ministers bound hand and foot through the terms of a treaty recognizing Russia's protectorate, than negotiations were opened in Paris for the immediate financing of railway lines within the new state, under a Russian guarantee as to principal and interest on the loans. This told the interested Powers that Russia was again starting her plan of conquest or annexation by railways, leading up to the complete absorption of Mongolia. This Russian move forced Japan to extend her activities into Inner Mongolia. Here we have the sole reason for Japanese military operations in these regions; the compelling motive influencing Japan to embrace this region within her sphere of interest. If Japan refrains from pushing her influence deep into Inner Mongolia, Russia will employ the territory, when the time is ripe, to strike at Japan in Manchuria from her most vulnerable side. Once Russia gained the whip-hand in Mongolia, she applied her pet policy of closing the country to railway construction and Chinese colonization. Mongolia became a closed sphere, nominally independent under the suzerainty of China; in reality, another hidden empire to screen the forward moves of Russia toward her goals in India and Japan; a land that the Yellow Man might not live in. The rest of the world slept. The Czar was advocating World Peace, his Ministers were preparing for war. Russian policy never changes. She again scored.

Let us return to the situation in Tibet. The Younghusband expedition was sent to Lhasa in 1904, ostensibly because of a failure on the part of China to comply with the trade regulations agreed upon in 1893, in reality, to forestall Russia. As a result of the occupation of the sacred capital of Bhuddism, the Lama Hierarchy was forced to sign a treaty providing for the non-alienation of Tibetan territory to any foreign Power; the prohibition of foreign intervention in its affairs; the exclusion of all political agents or representatives; the interdiction of the revenues of the country being mortgaged, and, finally, closing the door to railway, mining and other development concessions. To this agreement, China was forced to assent in 1906. Russia also reluctantly accepted the accomplished fact and entered into an agreement with Great Britain to recognize the above conditions. Tibet was converted into a water-tight compartment, a buffer state, created to protect India against the forward march of the Bear. Britain scored. During the revolution of 1912, the Chinese were driven out of Tibet, and on January 11, 1913, her independence was declared by concluding a treaty with the Hutuktu, the ruler of Mongolia, who had passed under the thumb of Russia. In this, Russia scored, compelling Great Britain to call upon China for the negotiation of a new agreement concerning Tibet.

The struggle for Empire, for control of India, assumed a new phase with the return of Russia during the Chinese Revolution. Checked in her frontal march upon India through Tibet, Russia again retreated into the background and employed her Belgian agent and French financial partner to open up an oblique road through China. The Belgians appeared on the scene during the revolution. One of their first transactions was to advance a loan secured on the Kalgan railway, a line that Russia had kept her eyes on for many years, the only pass through the mountain wall between China proper and Mongolia. Again Russia scored and circumvented the Scott-Muravieff understanding, and Britain countered by having the Belgian loan absorbed into the general Reconstruction Loan advanced by the Consortium. When Russia was admitted into the Consortium the Belgian syndicate appeared as the official Russian Group. One of these Belgian syndicates then obtained the concession for the great trunk-line from the sea at Haichow to Lanchow and beyond in the Kansu Panhandle; the centuries-old highway into Central Asia. This was the first half of the great trans-Asian line which would ultimately connect with the Russian system in Central Asia. The original deep-water terminus at Haichow was then shifted to Tungchow, located on the Yangtze River near its mouth. The Bear was at last in the Yangtze, squatting on the north bank and twiddling his claws at the discomfited Lion across the river at Woosung. Russia had not only sneaked into the Yangtze Valley, but had set at naught all the carefully laid plans of Britain in Tibet, by flanking this territory all along its northern borders. The work of a century of British diplomacy and foresight was being wantonly destroyed by a group of Chinese officials selling their country piecemeal to the Czar. Britain woke up with a bang.

Hardly had the ink dried on this astounding contract, when the Chinese officials capped this piece of diplomatic stupidity by handing over to another Belgian syndicate, leagued with Russia, the concession for a through north and south trunk line connecting Tatung on the Mongolian border with the city of Chengtu, the provincial capital of Szechuan, commanding the natural passes from China into Tibet from the east. At Chengtu the Russo-Belgic combination at last linked up with the lines of their French partner from the south. The dream of Empire was being realized. Mongolia had been cut away from China, and hurried steps were being taken to solidify the Russian position by means of new railways that would bring the armies of the Czar down to the exposed western flank of Japan in south Manchuria. China was cut in half from east to west by a line that would run from Central Asia to the sea at the mouth of the Yangtze, paralleling the northern borders of Tibet and creating a southern military boundary for Mongolia. From north to south China was split in twain by the Tatung-Chengtu-Yunnan-Yamchow combination commanding the principal roads and passes into Tibet from the east and north-east. This line would bisect the east and west line and the two merge into one in the fertile Wei River Valley, the cradle of China's civilization. Sianfu, the ancient capital of China, would become the central base of future Russian operations. The implements for throttling British rule in India, through control of Tibet had been forged. At every step China faithfully adhered to her alliance with Russia surrendering the use of her territory to menace the position of Britain in India and exposing Japan to the mercy of the Czar. Is it any wonder that Japan and Great Britain came closer together for the protection of their common interests?

Great Britain had no choice left to her. She closed the Yangtze. She announced her intention so that all the world might heed the warning. There was no mistaking the words of Sir Edward Grey in his memorable speech before the House of Commons on July 10, 1914. The United States government had refused to go beyond words in its interpretation of the Open Door. With Britain it was a matter of life and death, and no matter how willing she was to open the Yangtze Valley to all, the action of the Chinese government in inviting the Russians south of the Great Wall and endangering the existence of the British Empire, compelled her to discard ideals before the stern necessity of self-preservation.

China had placed herself in the jaws of a giant Russian nutcracker; she sold her birthright in Manchuria, Mongolia and Hsinkiang to achieve her revenge upon Japan. She had become a menace to herself, a formidable danger to the existence of others. When Britain announced that the Yangtze Valley was closed, France understood that the play was over and hurriedly slammed to the door in Kwangsi and Japan later presented the Twenty-One Demands in order to consolidate her position in Manchuria and Inner Mongolia.

Not only were India and Tibet menaced by the Belgo-Franco-Russo strategic railway system, but by Russia's occupation of Mongolia, Japan's position on the mainland became absolutely untenable. Reference to the map will clearly show that the main Belgo-

Franco-Russo lines all debouched upon Shantung, enclosing that province and Peking in a Russian trap, handing over to the armies of the Czar all the territory north of the Yangtze Valley.

We can now understand Japan's determination to oust Germany from Shantung. If Japan had remained neutral or semi-quiescent, Russia sooner or later, would have insisted upon the right to lay siege to Tsingtao from the land side, sending her troops through Chinese territory for that purpose, or, in the event of an Allied victory with Japan on the outside, Russia would have claimed the German rights in China which would have provided her strategic railways with a fine ready-made deep-water terminus at Tsingtao, instead of Tungchow on the Yangtze. Under such conditions, Great Britain would have been compelled to yield the point to save her position in that region. It meant another step forward for the Bear in Asia. The Central Asian Lung-Hai-Tatung-Chengtu system would have found its northern outlet to the sea over the rails of the Russo-Franco Chengtai line, and thence over the German Shunteh-Tsinan and Shantung railways to Tsingtao. The terminus of the Lung-Hai line would have been diverted to Tsingtao over the German Kaomi-Hsuchow project.

With Russia entrenched in Mongolia and northern Manchuria and heir to the German rights, Japan would have been surrounded and compelled to withdraw from the mainland and take her last stand, make the last fight for her existence, in Korea or the Japan Sea. It is rather tiresome to read Chinese and foreign surmises as to the reasons which prompted Japan to enter the war and attack the German stronghold at Tsingtao. She had no choice in the matter. An Allied victory with Japan on the outside meant the domination of Shantung and north China by Russia. Japan did the proper thing. Instead of heaping abuse upon the heads of the Japanese military leaders and accusing them of entering the war for territorial expansion in pursuit of a set policy of imperialism, we should acknowledge the superior military genius of men who knew best how to safeguard the existence of the empire entrusted to their keeping. Militarists have no ideals. Their duty is to defend the nation and lay plans far in advance for any possible contingency.

The players were keenly intent upon their game during the war. Great Britain has taken advantage of exceptional opportunities to drive her frontiers and influence deep into Central Asia against the day when the Bear will once more start upon his devastating march. Democracy may prevail in Russia ; again, it may not. Britain is taking no chances in a game that has been going on for over a century. There is no assurance that Russia will not take it up where she left off. The weak spots in the defense of India have been strengthened. Persia is another Egypt under the protection of Great Britain. She pays the penalty for refusing to place her house in order and provide protection to the British Empire.

Immediately following the ratification of the Persian treaty, on August 18, 1919, came the announcement that Great Britain and China reached an agreement in regard to Tibet. The Chinese Foreign Office agreed to grant autonomy to Tibet while retaining suzerainty over that country ; and the proposal met with the approval of the British government. China will be relieved of the burdensome and hitherto impossible task of keeping Tibet in order ; and the British desire for the maintenance of Tibet as an autonomous buffer state is realized. In other words, Great Britain finally counter moved against Russia in Mongolia, applying the identical tactics. Tibet is declared an autonomous, independent state under the suzerainty of China, and, on the side, Britain has separate understandings with Tibet which places the newly created state under her protection. Just like Mongolia, the same as Persia yet not a note of protest from the Chinese.

In the east, Japan was desperately trying to hold down the situation and extend her foothold in northern Manchuria, Mongolia and Siberia. She has taken advantage of every opportunity to fortify herself, and extend her front line trenches as near as possible to the coming menace. What could not be done with shovels and trench tools, was accomplished with gold. Russia got a taste of her own medicine ; her methods were turned against her ; Japan purchased every right the Chinese mandarins would part with.

Japan did what any other nation placed in the same position would do under the same circumstances. The Northern and Southern leaders were on their knees begging Japan for ready cash to fight each other with. The Northern, or militarist government, was recognized by the Powers ; it had the power to contract loans and hypothecate resources. Japan went the limit in obtaining control over rights deemed essential to her future security against the "come-back" of Russia. She did her work well. She confirmed her strategic position in Manchuria and Inner Mongolia by a definite railway agreement and paid down $10,000,000 bargain money to clinch the deal. She loaned funds for the Peking-Kalgan-Suiyuan railway and obtained an option on the future financing of this strategic line of the Inner Mongolian defenses. She outwitted Russia, planting herself squarely across the path of the Bear. Russia played a magnificent stroke when she separated Mongolia from China and outflanked Japan's position in south Manchuria. Japan has quietly, impatiently at times, awaited her opportunity and repaired as far as possible the damage caused by China's weakness.

The struggle for empire, for the right to live and exist is still going on within the hidden confines of Central Asia. There is no power or combination of Powers that can dislodge Japan from her position. She will fight to a finish and go down to oblivion before she will again leave the door open and the road clear for the Bear to walk through. It is time for Americans to wake-up and face the realities of the situation. Instead of heaping abuse upon Japan for protecting herself against attack, Americans should applaud the genius of statesmen who directed the moves, in the same manner, that, in the past, they went into rapturous admiration over the marvelous advance of Russia, and insist upon the application of the same policy where their own interests are concerned.

Judge Gary Denounces the Warmakers

NEW York, December 16—Judge Elbert H. Gary, President of the United States Steel Corporation, speaking at the annual dinner of the Japan Society here, denounced what he termed the vicious and deliberate efforts to foster trouble between the peoples of the United States and Japan. Should there be a clash between the two countries, he said the people of the United States would be more to blame than the Japanese.

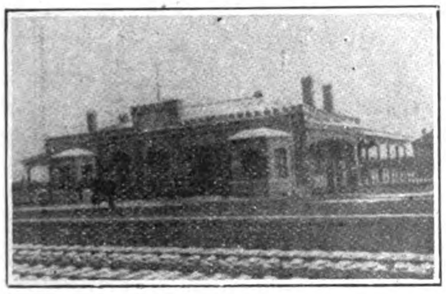
Judge Gary asserted that he likes to trust the honesty and integrity of the Japanese, and that they are building warships as a last resort against an attack without reason.

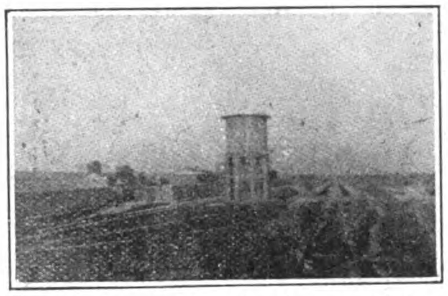
Baron Shidehara, the Japanese ambassador in Washington, and Mr. Roland S. Morris, the American ambassador to Japan, were among the guests. Mr. Morris remarked that Baron Shidehara and himself are working together at Washington, not negotiating a new treaty, but, with the consent of their respective governments, they had discussed frankly and fully certain questions which had arisen between the two countries, trying to understand each other's point of view, and striving to find a solution which they may submit for the consideration of the two governments. They are doing this, said Mr. Morris, confident in the belief that there are no questions which, approached in a generous spirit of candor, are not susceptible of an honorable solution, giving evidence of the friendly feeling between the two peoples.

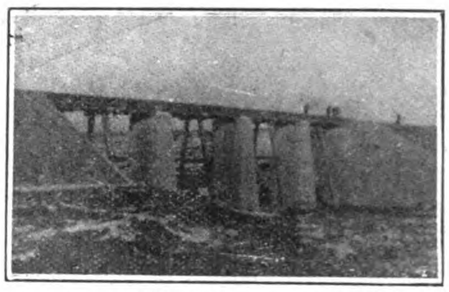
Lung-Tsing-U-Hai (Lunghai) Railway Agreement

The following is the complete text of the Lunghai Railway agreement :—

THIS Agreement was concluded at Brussels on the first day of May Nineteen hundred and twenty :— The Contracting Parties are : (1) His Excellency Mr. Sao Tseng-sze, general manager of the Lunghai Railway (Lung-Tsing-U-Hai), acting for the government of the Chinese Republic, by virtue of its authority, on a special mission which has been entrusted to him by his government, in the first part. (2) The General Company of railways and tramways in China, Belgian Anonyme Societe, head office Brussels, represented by M. François Empain and M. Jules Jadot, Administrators, called the General Company, in the second part. (3) The Nederlandsche Maatschappi Voor Havenwerken, Societe Anonyme Neerlandaise, head officer Amsterdam, acting in its own name and for the Dutch group called the Netherland Syndicate for China, represented by Mr. Robert de Vos, duly accredited and called "The Syndicate Neerlandais," in the third part.


Lotung Railway Station at Honanfu


R. R. Yards at Honanfu, Lotung Railway


Lotung Trestle near Honanfu

1. The contracting parties engage themselves to co-operate on the following conditions and reservations, to carry out the loan contract of the 24th September 1912 between the General Company and the Chinese government for the construction of a railway from Kansuh to the sea and a marine port.

This co-operation will be limited to the marine port, and to the section between the sea and Sanchow, or such neighboring points of Sanchow on the Yellow River up to the rapids of Sanmen which will be chosen as the terminal point at the west. Its ramifications can be extended only in the event of a new agreement being made, to the section to be built on the western point connecting with the Yellow River.

2. The General Company and the Syndicate Neerlandaise are in charge to issue the loan for the Chinese government, which will be necessary for the carrying out of the work, the ordering of material, the financial service and the re-imbursement of the loans already issued or to be issued.

3. From now on it is agreed that : (1) The General Company is authorized to issue at different periods a nominal total of 150,000,000 francs, the half at least is to be used for the west section, between the actual terminus (Kwang Yin Tang) and the Yellow River, or for the loans required during the construction of this section.

(2) The Syndicate Neerlandaise is authorized to issue at three periods the nominal amount of 50 millions Netherland florins, of which half at least is to be used for the port and section between Tsinpu and the sea.

(3) If the amount is not sufficient for the object of the present agreement (Art. 1 above) the Chinese government will authorize the General Company and the Netherland Syndicate to issue more money.

(4) All the loans which will be issued by the General Company and the Syndicate Neerlandaise by virtue of articles 2 and 3 above, will be to the regime of this present agreement, except those of interest, length of redeeming, and issue conditions, which will be fixed specially for each issue.

(5) This loan will be governed by the agreement of the 24th September 1920 (with any changes which would meet with the approval of the Syndicate Neerlandaise) except the special explanatory complete or subsidiary conditions mentioned in this present agreement.

They will be placed in every respect in the same category as the loan issued in 1913 and the treasury bonds issued in 1916 and 1919. They will have all the rights, privileges and guarantees as the agreement of 1912 recognizes to the loan, specially the regime established by the agreement of 1912 for construction, exploitation, use of funds, and other debts, will be applied to the loans issued by virtue of the present agreement.

(6) In the general interests of the railway, the principle of unity of the Lunghai enterprise is to be maintained. The principle direction and the general interests of the foreign interests will be entrusted to the General Company, without prejudice of right or claim, which will occur from the execution of the present agreement.

(7) In what concerns the division of the railway at the east of Tsinpu and the marine port, a special regime will be established by virtue of which the foreign employees engaged to work there will be engaged by the Syndicate Neerlandaise. These employees will be placed under the orders of the chief engineer, who will entrust the discipline and work service to the chief of the eastern service.

The chief of the eastern service can only be dismissed in the interests of the company and with the agreement of the Syndicate Neerlandaise.

(8) Technical work to be made in Europe for the eastern division will all be performed by the company general in matters concerning the railway line, but the work relative to the construction of the port will be entrusted to the Syndicate Neerlandaise at Amsterdam. Although it is only a provisional question of constructing a western line—the survey of the port will be taken up again as soon as possible.

(9) The construction of the port will be given to the contractor chosen by the Syndicate Neerlandaise and carried out according

to the plans and specifications approved by the chief engineer and the general management of the railway.

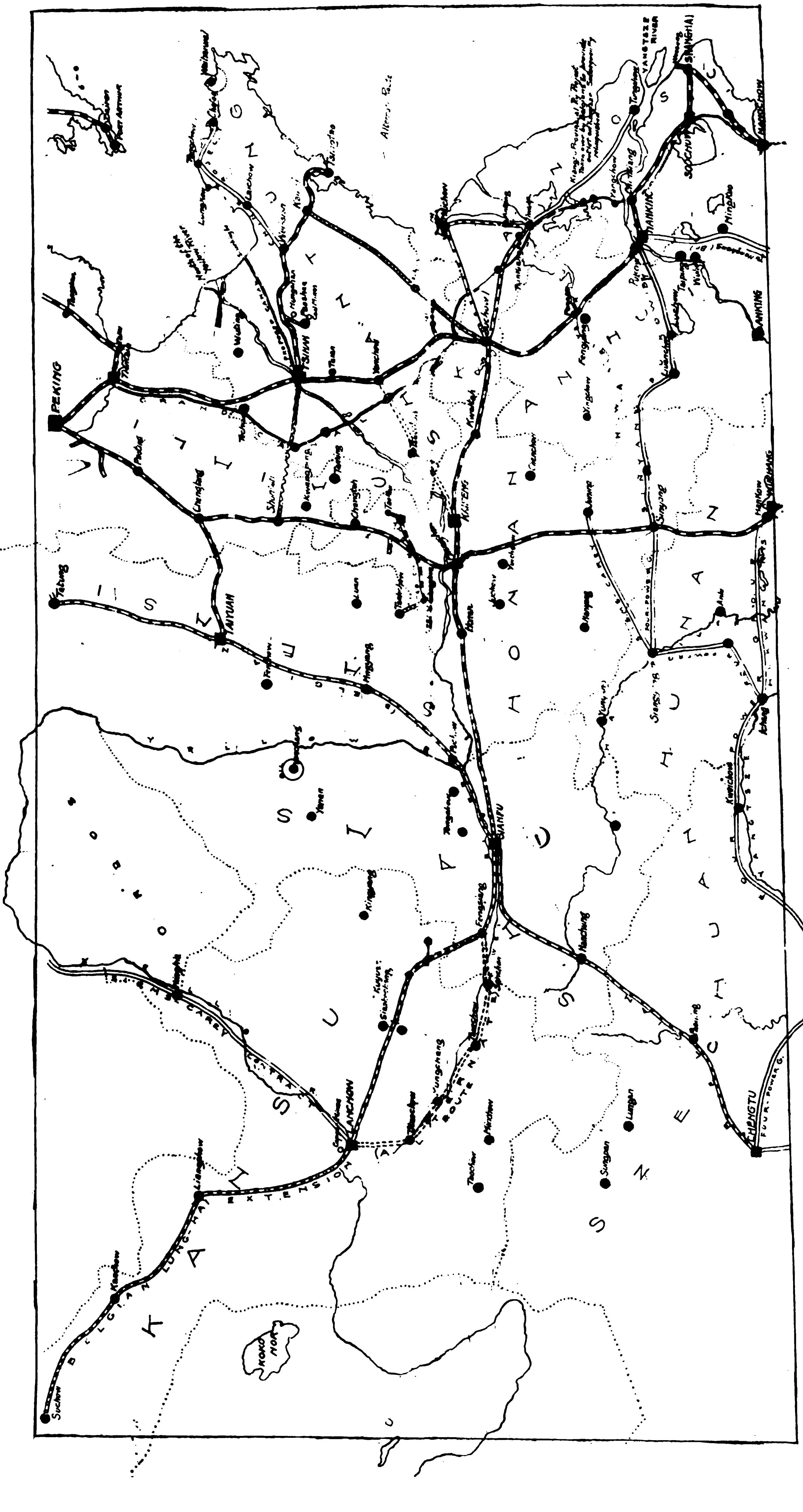
(10) The port will be built by contract. The price of the contract must be submitted by the chief engineer to the general manager and approved by him as soon as possible after the plans and specifications are finished. The Syndicate Neerlandaise will be admitted to the discussion of the contract.

(11) The orders for supplying the division west of Tsinpu will be the same as the contract 1912, giving preference to Belgium and France. When the factories of the above countries are unable to furnish, the preference will be given to Dutch interests through the Syndicate Neerlandaise.

For the supplies of the division east of Tsinpu and to the port, the General Company will rely upon the Syndicate Neerlandaise who will give the first preference to Dutch industries, after to French and Belgian.

The colonies will be assimilated to their motherland. The factories in foreign countries with Belgian, French and Dutch management will have the preference over other foreigners.

(12) According to Article 13 of the contract of 1912, the Syndicate will put the net amount of the bonds at the disposition of the railway Lunghai, and they will open a current account at Amsterdam named "Government Chinois-Chemin-de-fer de Lung-Tsing-U-Hai." The railway can draw from this account according to their needs with the consent of the General Company and the Syndicate Neerlandaise.



THE LUNG-HAI RAILWAY ROUTE

(Sketch from C. In. Mission Map of China)

The total credit of this account will carry an interest of 3 per cent. per annum to the benefit of the Lunghai.

(13) In order to repay the interior loan the sum of $1,800,000 (Mex.) can be withdrawn from this account.

(14) An ample provision will remain in the hands of the General Company and the Syndicate Neerlandaise to assure the financing of the loan up to the first of July 1922, to cover the expenses of the survey of the port, to pay for material, and other expenses in Europe.

(15) The General Company and the Syndicate Neerlandaise respectively will issue immediately the first portion of the loan as per Article 3.

These bonds of a nominal value of fifty million francs, and sixteen million six hundred and sixty-seven thousand florins (Netherland) respectively, will be represented treasury bonds of the Chinese government carrying 8 per cent. interest yearly to be paid half-yearly, re-imbursable at par by one-fifth of the issue yearly, to begin from the sixth year and to terminate at the end of the tenth year. The anticipated re-imbursement can only take place in the case of a cancel of this agreement (see Art. 18).

(16) The General Company buy firm at 91 per cent. the fifty million nominal and the Syndicate Neerlandaise buy firm at the price of 91 per cent. the 16,667,000 florins (Netherland) nominal, as soon as the notifications foreseen by Article 19 has been made. The General Company and the Syndicate Neerlandaise will place at the disposal of Lunghai, a third of the amount respectively. The whole amount will be placed at the disposal of Lunghai within a period not longer than forty days after the notifications. However if the notification has not been made on the first of June 1920 at the latest, the General Company and Syndicate Neerlandaise will be exempt from any engagement to buy firm any of the bonds at 91 per cent.

(17) The Syndicate Neerlandaise will not be obliged to issue before the first of July 1922, the second third of the loan (see Article 3) neither before the first of July 1923, the last third. If at the expiration of these periods these issues have not taken place on account of the political or financial situations, the Chinese government and the General Company will grant to the Syndicate a reasonable period of prolongation.

(18) If this extension of time passes without the Syndicate Neerlandaise being unable to issue, this present agreement will be null and void as soon as the issues and advances made by the Syndicate will have been repaid with interest up to date.

(19) The Wai-Ciaopou will notify the ministers of Belgium, France and Holland in Peking, of this present agreement. Moreover the Wai-Ciaopu will notify the minister of Holland the agreement of 24th September, 1912 and its particulars.

(20) In case of disagreement on the subject of interpretation or application of this present agreement, the difference will be settled by a court of arbitration composed of two arbitrators, presided over by a referee. An arbitrator will be chosen by each of the two parties, viz.: The General Company and the Syndicate Neerlandaise for one part and the Chinese government for the other part. The referee will be chosen before the beginning of the contest by the two arbitrators.

Made in three copies at Brussels on the first day of May 1920.

For the Chinese Republic: The General Manager of the Railway for Lung-Tsing-U-Hai.

For the General Company of Railways and Tramways in China: Two Administrators.

For the Nederlandshe Maatschappi Voor Havenwerken: Power of Attorney.

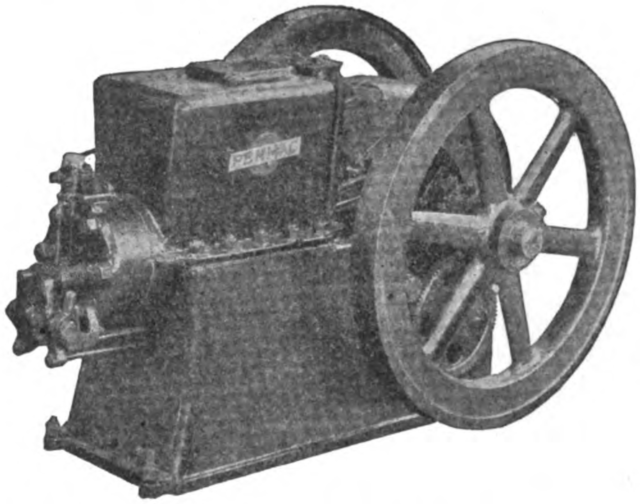
SHANGHAI EXPOSITION IDEA REVIVED.—Since his return from the United States, Mr. Y. T. Nieh, Chairman of the General Chamber of Commerce of Shanghai, has revived the idea of holding an international exposition at Shanghai. Conferences are proceeding, but no definite plans have been made.

Simplicity in Oil Engines

BELOW is shown an illustration of the Permac oil engine, one of the latest and most interesting American engines that have appeared on the market in recent years.

The Permac is a small oil engine designed chiefly for agricultural and small industrial power purposes. At the present time, it is made in 3 H.P., 6 H.P. and 8 H.P. sizes, but larger and smaller models will be added from time to time.

The most striking feature of the Permac is that it starts and operates on its own compression, and on the same fuel (kerosene, distillate, fuel oil), and has no ignition devices of any kind (no carburetor, no magneto, no battery, no wiring, no spark plug, etc.) Therein lies its greatest advantage over the gasoline engine. It has long been recognized that 80 per cent. of all engine troubles are due to faulty ignition, and that this has proved to be the greatest obstacle to the widespread use of gasoline engines. By eliminating all these ignition devices, the Permac will go a long way towards satisfying those who demand a prime mover whose cardinal feature is simplicity.



Another feature of the Permac, and equally as important, is its ability to operate on paraffin (kerosene) distillate, fuel oils or any of the low-grade oils. It does not operate on petrol (gasoline). The ever increasing price of gasoline and the great difficulty which many countries have experienced in procuring this product, have greatly added to the operating cost of gasoline engines. On the other hand, crude oil is found abundantly in many parts of the world, and there is no doubt that the Permac will be able to reach out into many fields where the gasoline engine is practically barred.

Operation.—The Permac is a high-compression four-stroke cycle engine and ignition of the fuel is automatically caused by the heat generated by the compression of the air in the cylinder.

The fuel injector is set into the cylinder head and has on the lower end a cup which projects down into the combustion space and which has in it some small holes pointing toward the piston.

On the suction stroke the fuel feeds by gravity past the needle valve, controlled by the governor, and the fuel valve into the cup.

On the compression stroke the air in the cylinder is forced into the combustion space under a pressure of about 450-lbs. which gives a temperature of about 1000° F.; entering the cup through the small holes the hot air causes the fuel in the cup to "flash" and it blows out in a fine spray through the holes into the combustion space where it burns and forces the piston on the power stroke. The piston returns on the exhaust stroke and the cycle is complete. The speed and power of the engine are controlled by the amount of fuel fed past the needle valve.

Although the Permac has been on the market for a comparatively short time, it has already aroused considerable interest in many parts of the world, and many orders have been received from the Philippine Islands, New Zealand, India, Straits Settlements, Japan, Great Britain, Argentina, Peru and other countries.

American Gold Dredge in Korea

THE Chiksan Mining Company, whose shares are largely held by Americans and Japanese, decided a few years ago to place dredges on their placer properties, and after careful preliminary prospecting, in the course of which several thousand drill holes were sunk, a modern, all-steel dredge was purchased from the New York Engineering Company.

The installation consists of a 500 k.w. Power Station located at Seikwan, a town on the Seoul-Fusan Railway, 50 miles south of Seoul, a high-tension transmission line extending about six miles to the dredger area at Chiksan and the dredger.

The Power-house consists of three Babcock and Wilcox boilers for 200-lb. pressure, automatic stokers, Green economizer, Curtis General Electric turbine and Wheeler condenser. The plant is especially designed to fit in with an additional unit when required.

A high-tension transmission line carries the current at 22,000 volts to a point within a mile of the dredge where it is transformed to 22,000, the voltage used by all motors on the dredge.

The dredge is all steel, and has a digging capacity of 25 feet below the water-line and will carry a bank 15 feet above water and can handle over 150,000 cubic yards per month.

This dredge has an over-all-length from tip to tip of 230 feet. The hull is 110 feet long, by 50 feet wide, by 10 feet deep, and has an overhang of 3 feet on each side, giving a deck width of 56 feet. The total weight is 1,300 tons.

The forward gantry is built up of 14, 1-inch beams capped with a 20.1-inch beam and has a height above deck of 43 feet. The main gantry is also built of 14.1-inch I beams and has a height of 31 feet, while the rear gantry is 63 feet high and built of 12-inch H beams.

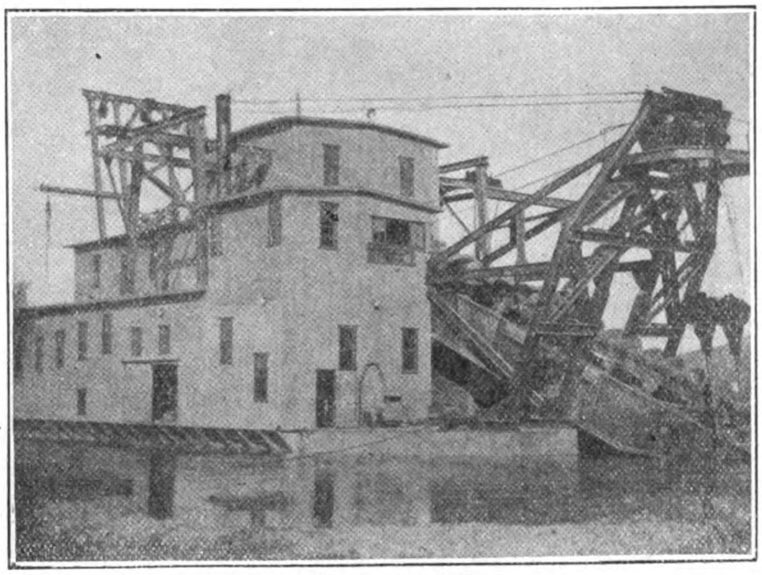
The digging ladder is 80 feet long, of the box girder type, and carries a bucket line of 62 manganese steel buckets close connected. The capacity of each bucket is 11 cubic feet; weight 2,400 pounds. These travel on manganese steel rollers, spaced six feet apart. The lower tumbler, 80 inches in diameter, weighs 9 tons and is of manganese steel. The lower tumbler shaft is hollow, chrome vanadium steel 14 inches in diameter. The upper or drive tumbler is hexagonal in shape, of solid manganese steel and weighs 11 tons. Its shaft is 22 inches in diameter by 11 feet 6 inches long, driven by double gears each 12 feet 6 inches in diameter by 10-inch face which are in turn driven by a double set of reduction gears forming the main drive. The entire weight of the bucket ladder, with rollers buckets and lower tumbler, is about 150 tons.

The motive power for the bucket line is furnished by a 200 H.P. 2,200 volt A.C. motor. This is so arranged as to be used for both hoisting the bucket line and digging.

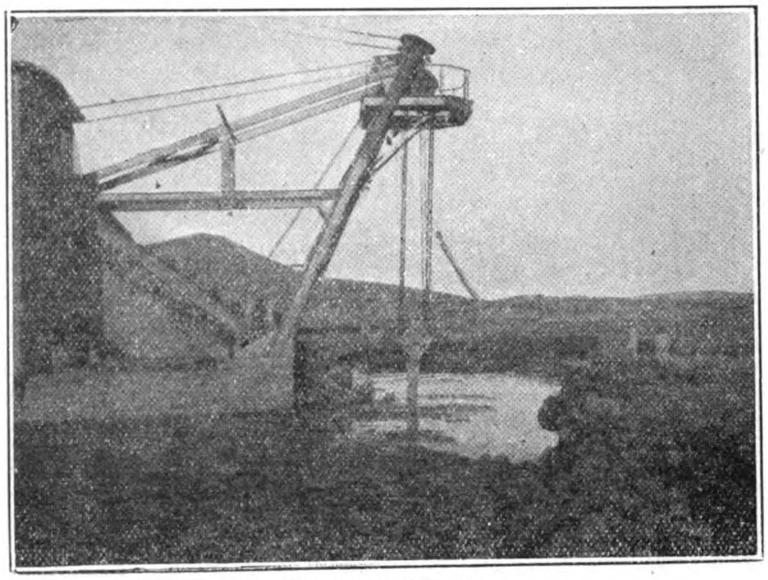
The buckets discharge through a manganese steel hopper provided with manganese steel wearing plates into a screen 84 inches in diameter by 46 feet long driven by a 60 H.P. motor. This screen is so arranged that when rotated in one direction it forces the barren material on it without it going through the meshes, and when revolved in the other direction retarding rings hold the material in the screen until the fines are forced through by water pressure. This is designed particularly for reclamation purposes.

Material discharged from the screen is either washed to the pond some 30 feet from the storn or led into a belt conveyor which discharges 100 feet in the rear.

The gold bearing material washed through the screen is distributed on the gold saving tables having an area of 5,000 square feet and equipped with Hungarian type riffles.



Digging Top Soil



Digging Bed Rock

Two spuds of the box girder type, 27-in. by 42-in. is section and weighing 17 tons each are provided for digging, and in addition a one and three-eight inch cable 1,000 feet long, is provided for a headline when it is wished to use that method.

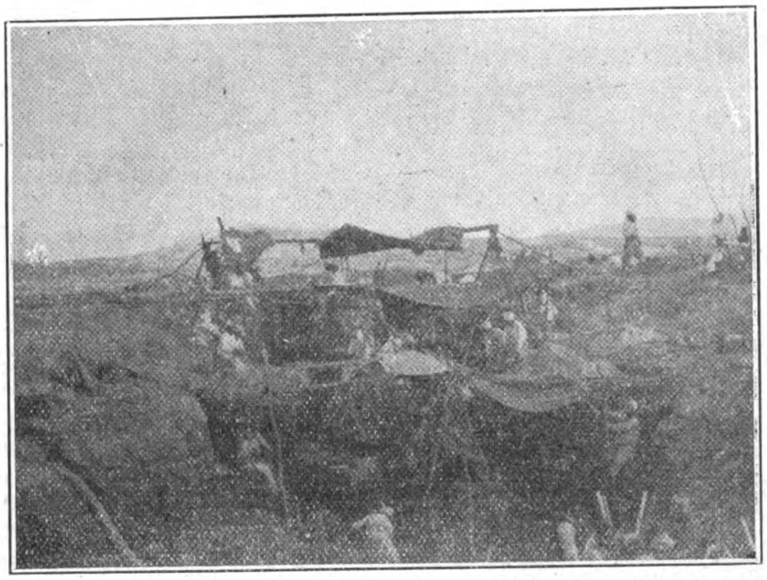
Water is furnished by three centrifugal pumps direct connected to 2,200 volt motors. The sizes are 4,600 gallons per minute with 60 foot head and a 125 H.P. motor, 6,000 gallons per minute with 25 foot head, and 75 H.P. motor and 750 gallons per minute at 150 foot head, and a 50 H.P. motor.

The main winch is mounted on the forward deck and carries 7 drums, four for the corner lines, two for spuds and one for head line. The winch is provided with double reduction gearing which provides two speeds for each drum.

A complete system of levers is provided, and all operations are controlled from the pilothouse, which is mounted forward on the upper deck and provides an unobstructed view to all parts of the dredge.

A 60-H.P. boiler furnishes steam for heating purposes, and the hull is so heated as to keep the pond from freezing in the winter.

In addition to the gold content of the placer area, the existence of monazite sand has been proven. Monazite sand is one of the rare earths chiefly valuable for its Thorium content. The Company is carrying on experiments with a view to recovering this sand. Zirconium also occurs in the sands.



Pumping—Native Method, while installing Electric Driven Centrifugal to furnish Water for Dredge

Netherlands Indies Developments

NEW RAILWAY PLANS

THE government of Netherlands East Indies has made public an outline of the program for the extension and improvement of state railroads, tramways, and roads in the Netherlands East Indies for the next ten years.

The plans for Java include: Double lines for those portions of the routes where the traffic is most crowded; improvement, extension, or rebuilding of important railway yards; new railroads in North Cheribon, in the Preanger residency south of Bandong; in the south and east of the Preanger; in the residencies of Batavia, Bantam, Kedu, Kediri, Pasuruan, and Bezuki; altogether up to about 1,000 kilometers (kilometer--0.62 mile) of new railways.

The plans for Sumatra include: Completion of the south Sumatra lines, namely, the whole of the route from Oostenhaven (Telok Betong) to Palembang; from Muara Enim to Lahat and from there to the Bengkulen highlands; and in the Djambi direction up to Klingi territory; extension of the line from Lahat to Tebing Tinggi, Surulangun, Muara Tebo, Teluk, and on up to Muara Kalaban and Pakanbaru; a line also to connect Benkulen with the coast; in Djambi, a line from Surulangun through the oil fields to Muarabahar which will be the junction of six branch lines; a railway from Sibolga to Padang Sidempuan, thence extending to Penjabungan and connecting the Deli Railway with Pakanbaru; a line from Padang to Pasir Pengarajan by way of Lubuksikaping, and a line also from Padang into the Ophir district; altogether upwards of 2,700 kilometers of new railways.

Railway Track Through Banjoewangi

The plans for Celebes are as follows: A line from Takalar to Macassar and Maros, this to be extended to Pare-Pare or Sungkang; a further extension from Pare-Pare along the gulf of Handar as far as Tubo; a line connecting Palapo and Malili by way of Lowa, with extensions to the Gulfs of Tolo and Tomini, and branch lines to southern Boni and Takalala; in northern Celebes a network of railways in the Minahassa district; altogether upwards of 1,100 kilometers.

The plans for Borneo are as follows: A line from Pontianak to Samoas, with a branch line to Bankajang; a line from Pontianak to Sarawak by way of Meraoe, with branch lines from Ngabang to Sanggar and Ngambang to Perigi; from Pontianak to Pematang-tudju by way of Sungeikakap; from Bandjermasin to Tandjung by way of Martapura; and from Martapura to Pagatan by way of Pleihari; altogether upwards of 1,300 kilometers.

In Bali, Lombok, Banka, and Billiton railways are projected up to about 500 kilometers altogether. Plans for the whole of these lines are now in course of preparation.

Besides its railways and tramways, Java has a good number of fairly well-kept roads. The plans for these include the construction and improvement of two highroads running lengthwise across the island, with five side connections. These fit in with the district road plans.

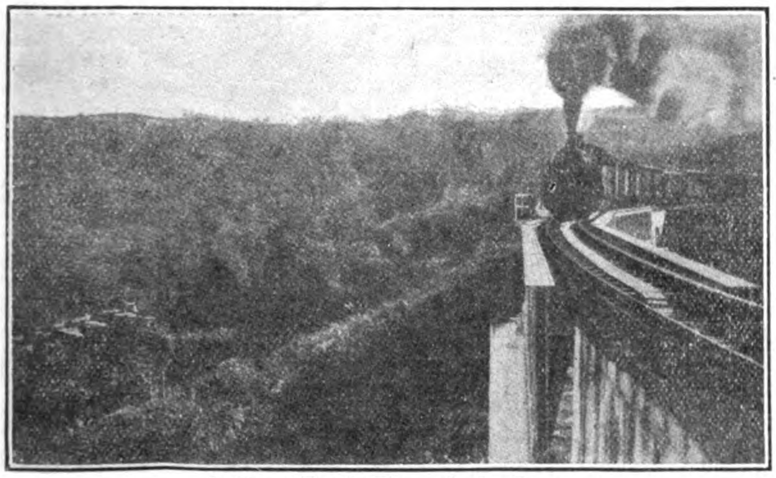
The other possessions are badly off in the matter of inter-district communication. In the meantime, however, a general program for the construction of roads has been made for Sumatra, including plans for something like 54 roads, aggregating a total length of 4,600 kilometers. The intention is to connect those already existing and to open up new roads to outlying districts as far as necessary.

For Borneo, Celebes, Bali, and other islands plans for roads have also been devised and partly executed. Preparatory measures, too, are being taken toward improving the navigation of such rivers as serve as ways of communication.

Much attention and energy is being devoted to the improvement of the means of communication in the other possessions. This will do away with one of the chief obstructions to the development on modern lines of the natural wealth of these places.

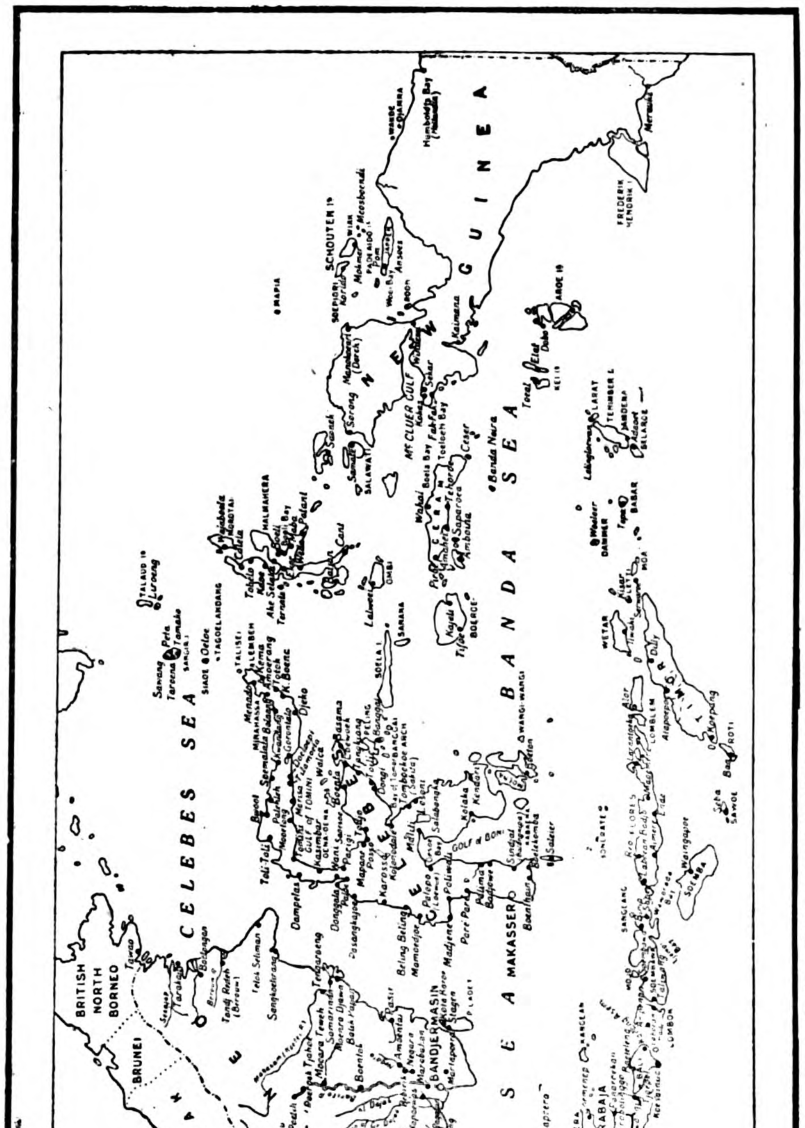
Water Power in Netherlands Indies

During the next few years a tremendous amount of waterpower development is expected to take place in the Dutch East Indies. The government of the colony plans to install plants in Java and Sumatra, and possibly in Celebes, of sufficient capacity to supply



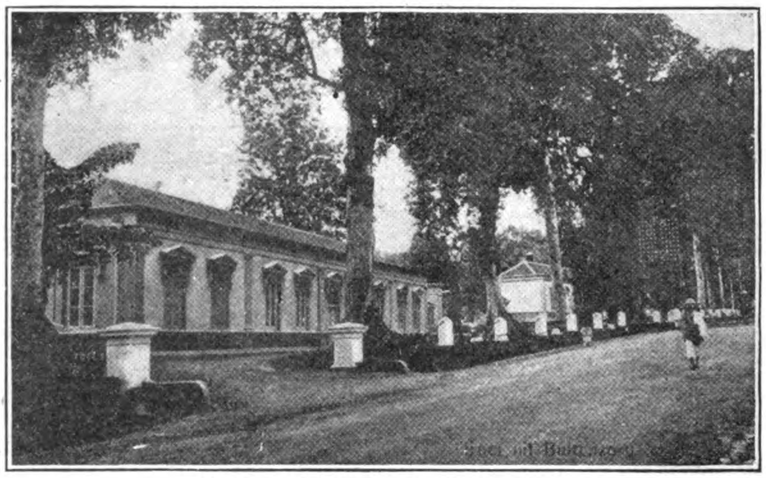
Railway Track Through the Preanger

Postal Road near Kraksaan



MAP OF NETHERLANDS EAST INDIES

all the railroads with electric power, and several other schemes are now being projected with a view of supplying electric power for lighting the cities and towns and furnishing power for railways and factories. A recent survey of the waterpower resources of the islands states that on the island of Java 500,000 horse-power can be developed from the rivers; in Sumatra the Asahan River alone will develop a similar amount of power, and in Celebes, the Posso and Laa Rivers will develop 200,000 and 100,000 horse-power, respectively.



Zoological Museum in Buitenzorg

Preliminary plans have been adopted for various developments of this nature during the past year and in several instances the work of building dams and installing machinery has already been started. The rivers of Java are very short and are therefore not well suited for large developments. Because of the great difference in rainfall between the two monsoons and the lack of natural reservoirs or lakes, the majority of developments projected range between 1,000 and 2,000 horse-power capacity. During the rainy months this capacity can be increased by between 50 and 100 per cent.

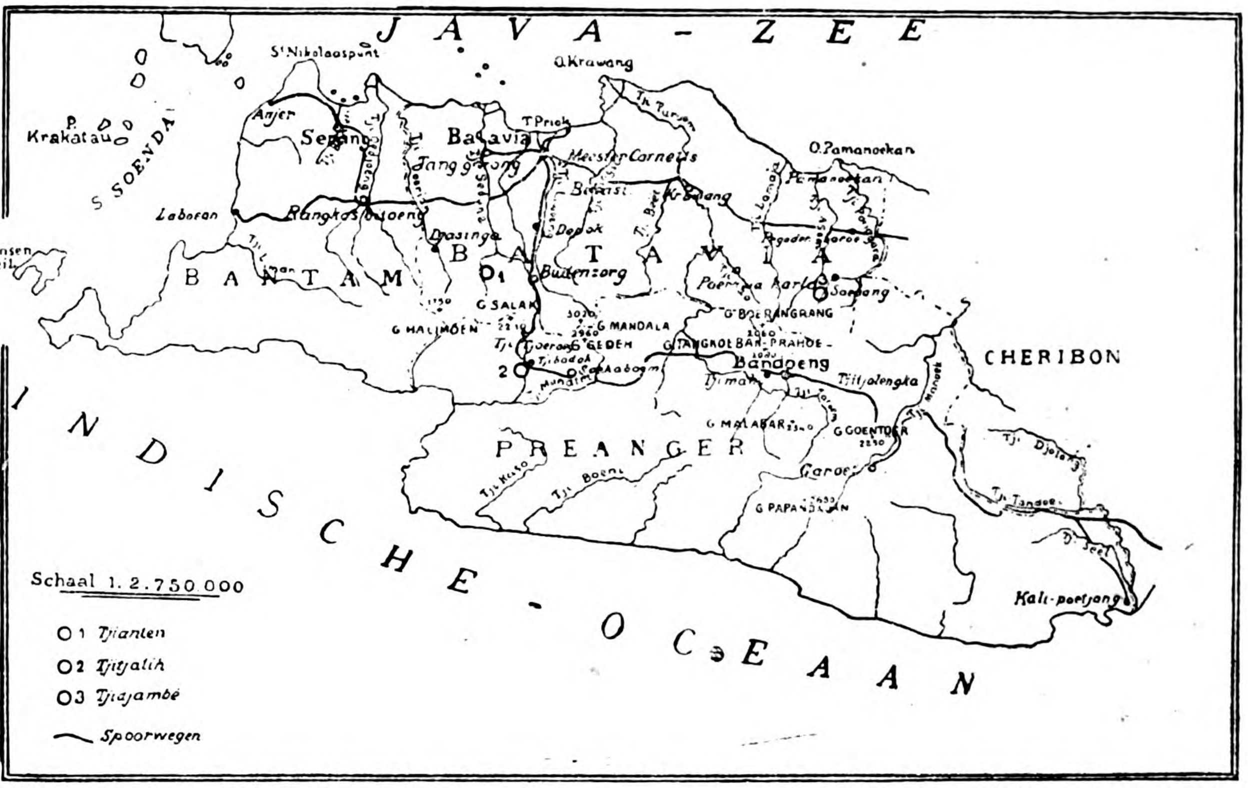
The first step taken by the government in the exploitation of the waterpower resources of the islands was the construction of a power station in the valley of the Tjiatoer River, near Madioen. Work on this project was begun in 1914 and completed four years later. The average capacity of this plant is about 2,000 horse-power, but at times as much as 3,000 horse-power is developed. The greater part of this energy is used for the workshops of the state railroad at Madioen, but some of it is sold to private enterprises, and the recent industrial activity in the surrounding district indicates that in a very short time all the surplus power will be contracted for.

In 1917 a second power station was erected in Sumatra for the purpose of supplying the gold mines in the Residency of Benkoelen with electric power. The necessary water for this purpose is drained from the lake of Tes in the Residency, and the power generated amounts to about 2,000 horse-power, although here also there is usually a sufficient volume of water to increase this by at least 50 per cent.

In 1917 an independent division for waterpower and electricity was established by the government, and facts and data regarding the waterpower resources of the archipelago were collected. Because of its dense population and its complete railroad system, which the government aimed to electrify, attention was for a time fixed on Java, but eventually private enterprise turned its attention to the other large islands of the group and discovered large sources of waterpower that were unused.

The government plan is to supply whole districts with sufficient power for the operation of railroads, factories and for supplying light for the cities. This is to be done by means of one or more co-operating central stations. The first step in this direction was taken last year when work was begun in the district of Bandoeng.

A private station capable of developing about 1,500 horse-power was taken over and doubled in size. Another power station with a capacity of from 2,300 to 4,500 horse-power is now being built. These two large stations will co-operate with two small ones that are already established in supplying Bandoeng with the power needed for the time being. During the four dry months of the year the waterpower stations will be supplemented by a caloric station. As soon as the present development is completed and the use of electricity becomes general several other waterpower resources in the district will be developed.



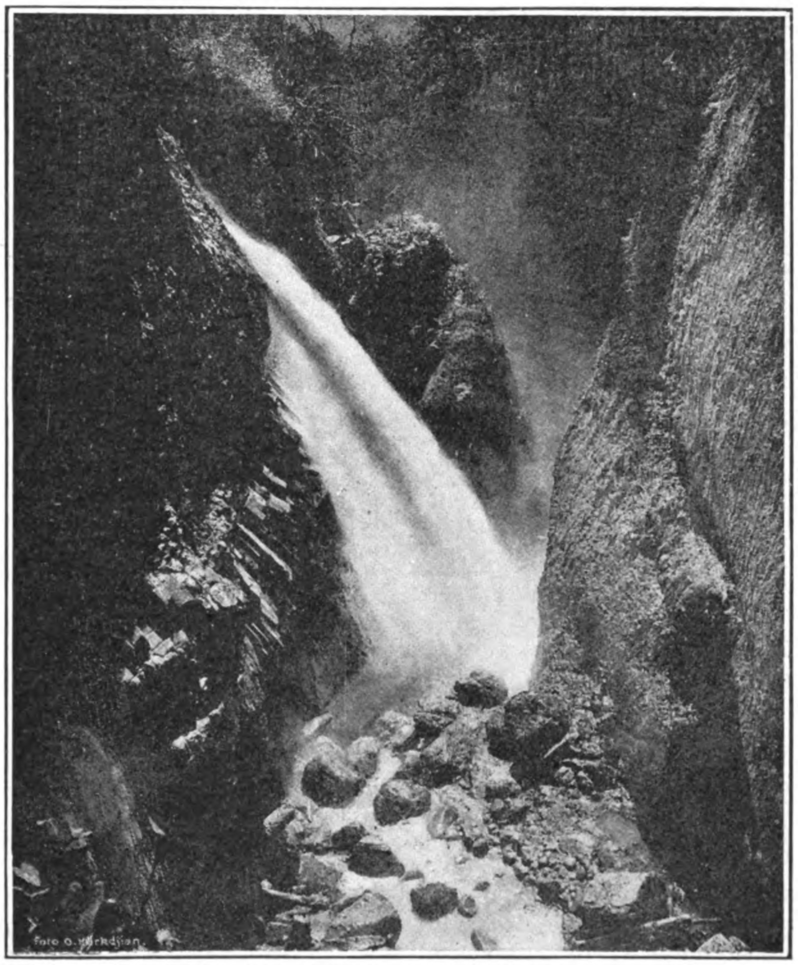
(*From Holland's East India*)

Map of West Java Showing Source of Water Power

Work on a power station in the Residency of Batavia was also begun last year, and when this project is completed it is probable that more than 50,000 horse-power will be generated. This development has been planned with a view of electrifying the Batavia Railroad and to supply light and energy to the towns along the railroad such as Tandjong Priok, Batavia, Meester Cornelis, Depok, Bruitenzorg, Tjitjoeroeg, Tjibadak and Soekaboemi. The plant which is now in course of construction in the Preanger Regentschappen will have an initial capacity of 3,300 horse-power, but will be enlarged to at least 6,000 horse-power as soon as a reservoir can be constructed. A second power station will be constructed west of Bruitenzorg on a tributary of the Tjisadane. This station will be fitted with machinery for developing between 21,000 and 28,000 horse-power. It is expected that the work on this project will be begun this year.

These are only a few of the many developments that are planned. Because of the great difference in the volume of water in the river during the rainy season (eight months) and the dry season industries that can afford to remain idle for four months of the year will be in a much better position to obtain electric power in the immediate future than those which need power the year round. Eventually, however, it is probable that sufficient power will be developed to supply all industries the year round.

Such development will create a demand for large quantities of electrical machinery, and, as the amount of power available increases, for electrical devices of all kinds for the home and factory.



Waterfall of the Banjoepait (East Java)

WATER POWER CONCESSION, JAVA.—A concession has just been granted by the Dutch East Indian government to L. A. Sand, a Norwegian residing at Pagilaran, Pekalongan, Java, allowing him to divert the whole of the waters of the Moesl River at or near the village of Despetah in the residency of Benkoelen, Sumatra, through a proposed short tunnel under the Barisan range of mountains and thence into the Indian Ocean a little to the north of the port of Benkoelen.

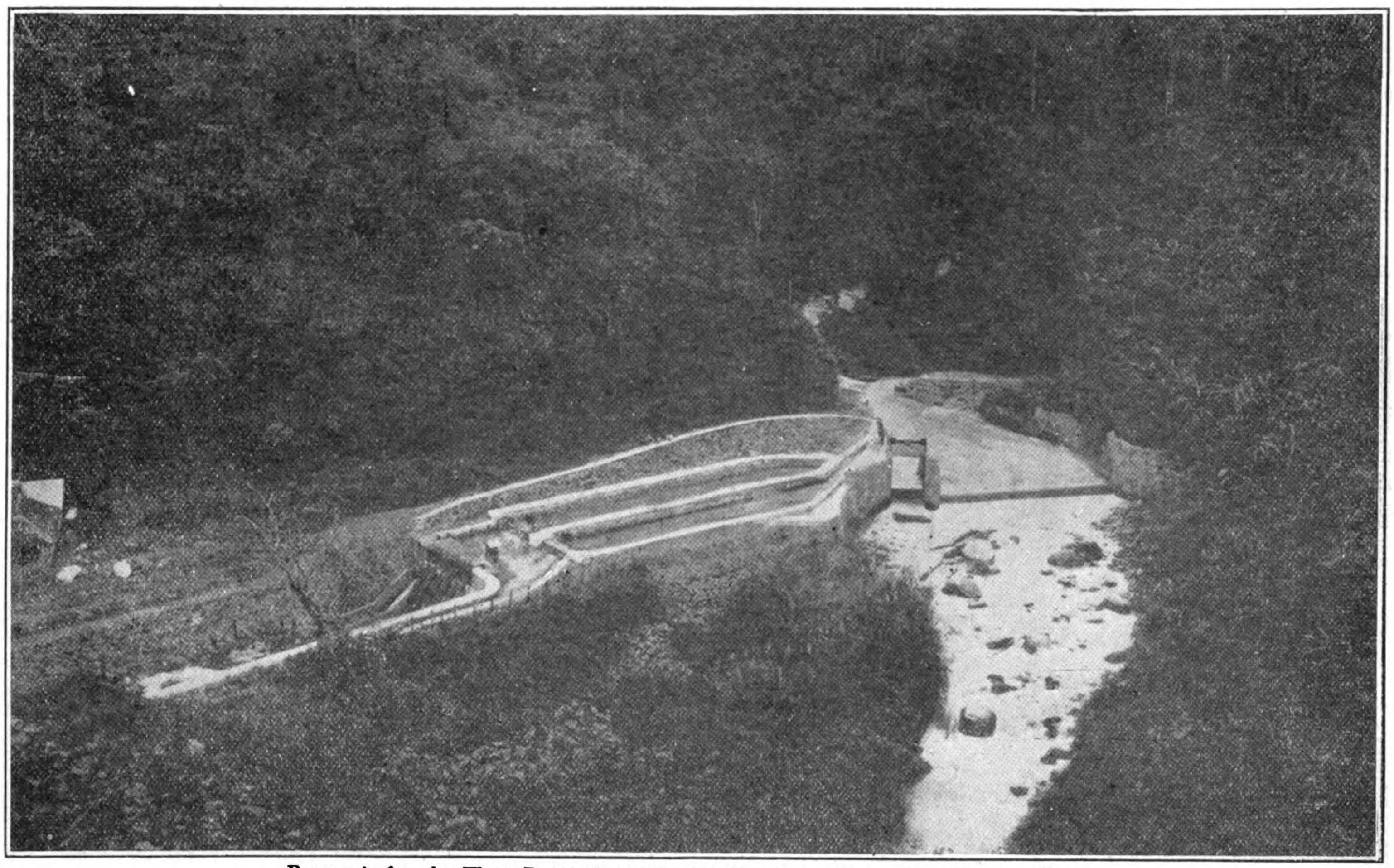
The concession has been granted primarily for a period of forty years and for the purpose of admitting the generation of electricity needed for the manufacture of fertilizers.

A yearly payment of one guilder per theoretical horse-power has to be made to the government, beginning in November, 1925, the number of horse-powers being fixed at one seventy-fifth of the product of the number of liters of water passing the turbines per second and the number of meters of static-head.

The concession carries with it the exclusive right to mine, for the purpose of manufacture only the coal and limestone known to exist around the proposed site of the station, as well as the right to build the forty kilometers of railway needed to connect the proposed station with the Poelau Bay of Benkoelen, unless the same is built by the state, as in all probability will be the case, the line forming part of the railway which will connect Benkoelen with Telok Betoeng, Palembang, Padang and Medan.

Netherlands East Indies Engineering

In the East Indies the demand for ice-making machinery, ice safes and chests for food and drinks is universal. Nearly every town has its ice factory. Portable ice machines would find a ready sale. Mineral waters are largely consumed and are made locally. Plant, bottles, and essences (full flavored) are in demand. The trade in motor-cars and cycles was captured by America during the war. There are 900 motor-cycles and about 3,000 cars registered in Soerabaya alone. The cars range from the most expensive to the cheapest, practically all with touring bodies.



Reservoir for the Water-Power Station in the Tjiatoer Valley, near Madioen (Java)

The hardware trade was in German hands before the war. In addition to the hoes, machetes, etc., required by European-owned estates, there is a large trade in tools for native use. There is also a very large bazaar trade in cutlery, rice bowls, etc.

The bazaar trade is very important. There is a large trade in cotton piece goods, small wares, padlocks, small tin boxes, trunks, enamelware, cheap perfumes, fish hooks, etc.

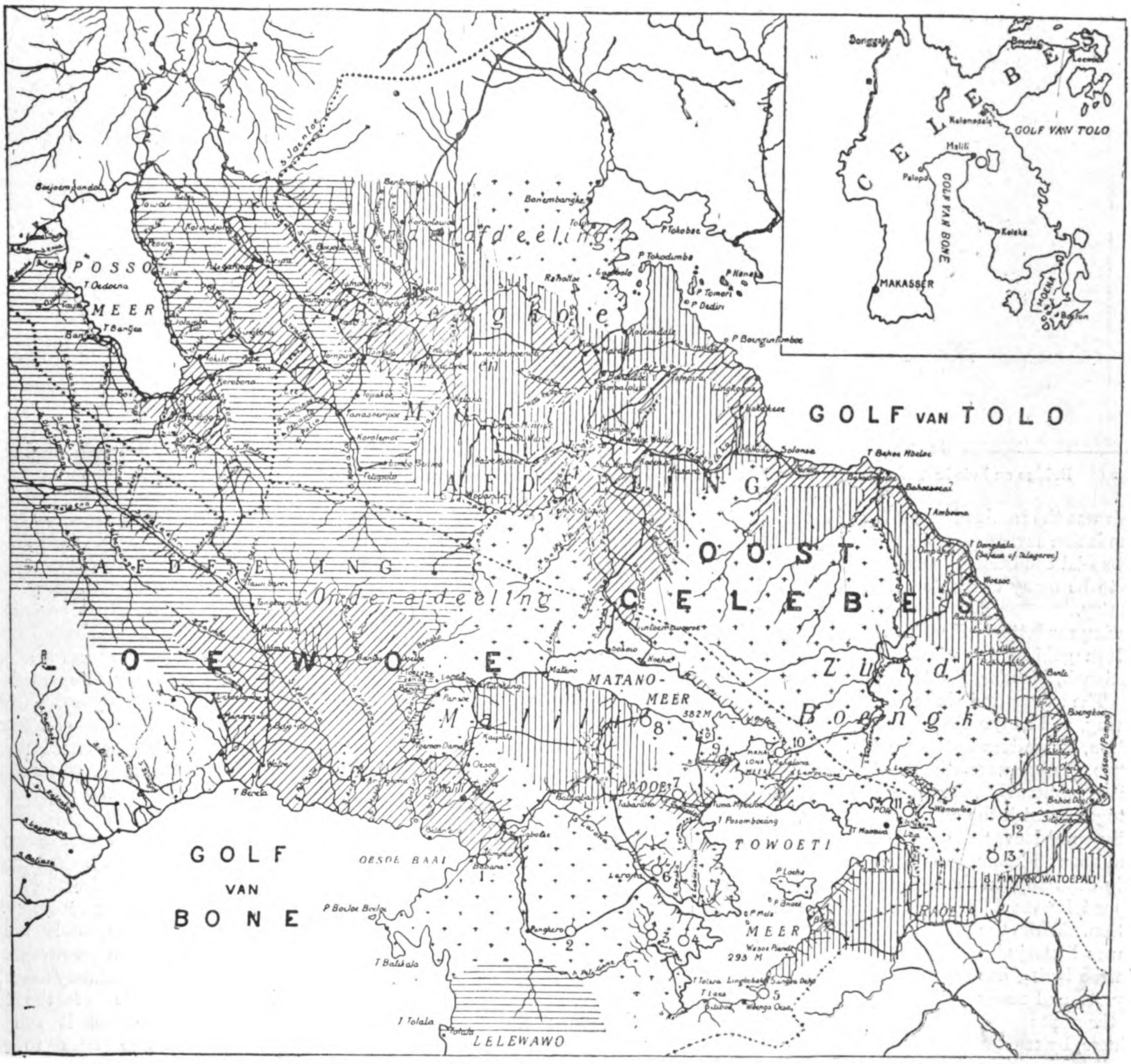
It is impossible to deal with all articles, but amongst others the following are imported in large quantities :—Sanitary appliances, bar iron and steel, sheet brass and copper, wire, drugs, tinplates, ship chandler's stores, provisions, etc. There is also an increasing demand for sugar machinery and oil crushing machinery. In 1914 there were 190 sugar factories and 47 oil mills working in the Dutch East Indies.

The Federation of British Industries has already appreciated this fact and has appointed a commissioner to look after British trade interests in the East Indies. This gentleman, Mr. G. O. Blacker, was specially selected on account of his intimate knowledge of the market, and has established an office at Singapore, to act as a commercial and intelligence centre for his district, which includes, besides the Dutch East Indies, the Federated Malay States, Siam, French Indo-China, and the Philippines. His intention is to make periodical tours round these countries and get into personal touch with actual users of manufactured articles of all kinds.

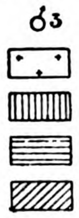
Method of Purchase, Government Supplies.—Under the present method of purchasing supplies for the Dutch East Indian government, various departments are permitted to get the material in the local markets independently of one another, but if such material cannot be obtained locally or is thought better to be procured from abroad, a requisition is made on the colonial department of the home government, which makes the purchase through its purchasing bureau. Though this method has its advantages, especially during war times when materials are hard to get, the government is said to have lost considerable sums through one department bidding against another.

With the hope of effecting a saving to the government and making the purchasing abroad more effective, officers of the colonial department of the home government have been in the colony for some months, arranging for a re-organization of the local purchasing system along more scientific lines.

Under this new plan, except for such articles as require special knowledge in selecting and testing, all purchases will be made through the purchasing bureau of the colonial department, which will have an office at Batavia besides the organization abroad. Duplicate requisitions will be sent to the Batavia office and to The



Iron and Steel District in Central Celebes



Hague, every opportunity possible being given the home business community to participate in the business. When, however, it is decided to make the purchase abroad, a requisition is sent to the branch office in New York and European manufacturers are notified that the purchasing office at The Hague is open to receive offers. Though this New York office has had wide discretion in purchasing, the probabilities are that requisitions will more and more bear instructions to refer prices and conditions to The Hague before definitely purchasing, as the European sources of supply open up.

The purchases for the government are a very important item in the imports of this colony, totaling in 1917 over 20,000,000 florins, or about $8,000,000, not including imports of gold and silver, and in 1918 the imports into Java and Madoera alone amounted to 27,360,-221 florins, or approximately $11,000,000, of which the United States supplied $1,170,000 of sundry imports and $2,262,000 of iron and steel products.

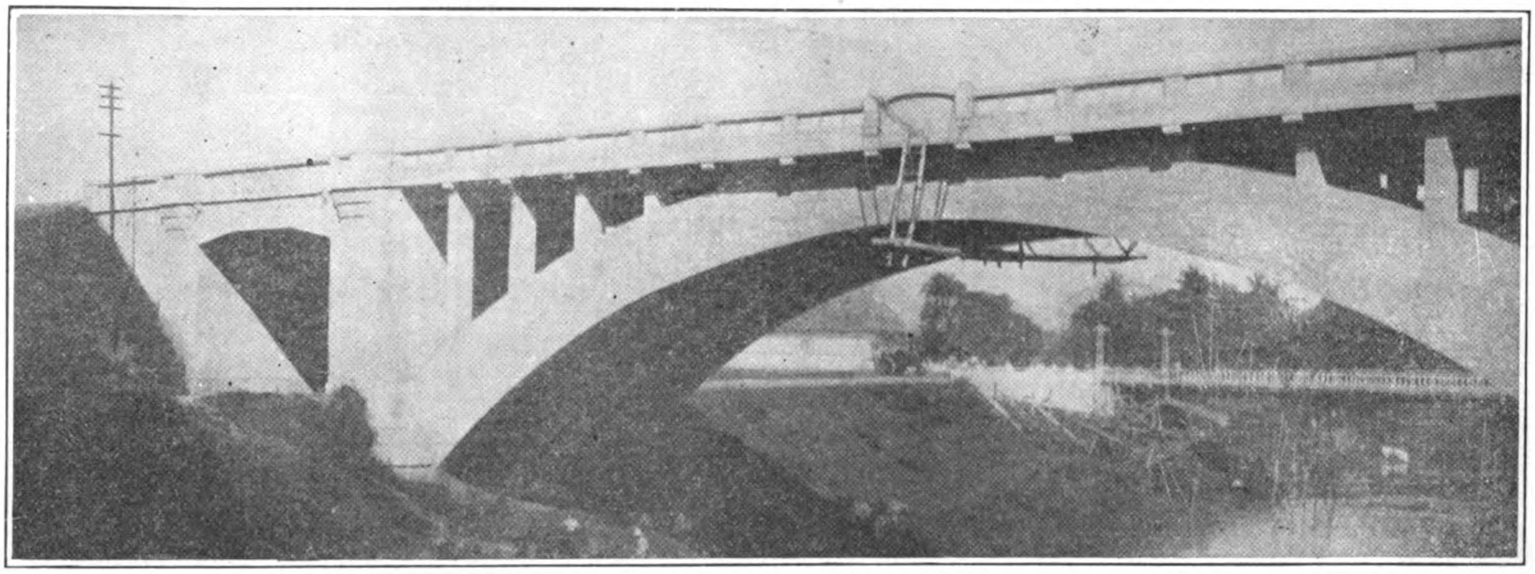
While the colonial government stands ready to give advice to the various district governments, their purchasing is done by the several minor governments themselves, save when the colonial government builds the improvements.

Dutch Borneo Development

The request for permission to lay down a tramway in the north-west of Borneo was the immediate cause of the government exploring the Residency of the western division of Borneo, which consists for the greater part of self-governing provinces.

It appears that, without any European aid worth mentioning, the Chinese who form the industrious part of the population there, have taken the lead in the economical development of the country and have brought significant prosperity to that part of the division. In this they have also had the support of the Malay, and together with them have set an example to the Dyaks who still form one-half of the population, by bringing about improved conditions of living by means of their industry.

After an almost interminable period of internal unrest and insecurity through lack of an energetic and powerful rule by a central authority, the disturbances and lawless conditions have during the last ten years gradually come to an end.



Bridge and viaduct of reinforced-concrete over the Tjiliwong between Manggarai and Meeter-Cornelis (Residency Batavia)

This was the result of the policy of the civil authorities and laid the foundation for economical prosperity and a peaceful development of social conditions. Order and peace once established, there appear to be many elements useful in economical development of the country.

During the latter half of the 18th century and in the beginning of the 19th gold-mining attracted a numerous Chinese population to Pontianak, Mandor, Montrado, Sambas, and the various coast places. The exhaustion of the mines made them turn to agriculture for a living, and as the abandoned mining districts were no use for cultivation, emigration to the coast was inevitable.

Again, the briny sea-climate of the north-west coast of Borneo makes it exceptionally suitable for the cultivation of the cocoa-palm, which together with the culture of gambir, pepper and rubber has gradually spread over the whole strip of coast a 1000 kilometers long and about 5 kilometers wide. Although the Malays had from the early days applied themselves to this culture, they were easily outstripped by the Chinese who had a more intensive system of cultivation. While the Malay uses little judgment in the laying out of his plots and never cleans them properly, the Chinese, by regular and judicious outlay and by keeping in good condition the plots succeeds in getting much higher profits. This is why the Chinese consider it an advantage to take over the Malay plots and thus continually extend the cocoanut plantations.

Tramway in Totoko, Celebes

From a distance of 25 kilometers south of Pontianak up to the same distance noth of the Sambas river and along that river up to Sambas, there is a numerous population almost equally distributed over the country while on the river estuaries important centres of traffic have arisen.

In this coast district, repeated attempts have been made since 1875 to open up local communication by digging canals parallel to the coast. Since 1913 several roads have been constructed : a main road runs from Pontianak along the coast up to Pamangkat, following the course of the canals ; from this again branch roads lead from Pamangkat to Sambas and from various other places into the interior, where the rubber culture is taking on considerable dimensions.

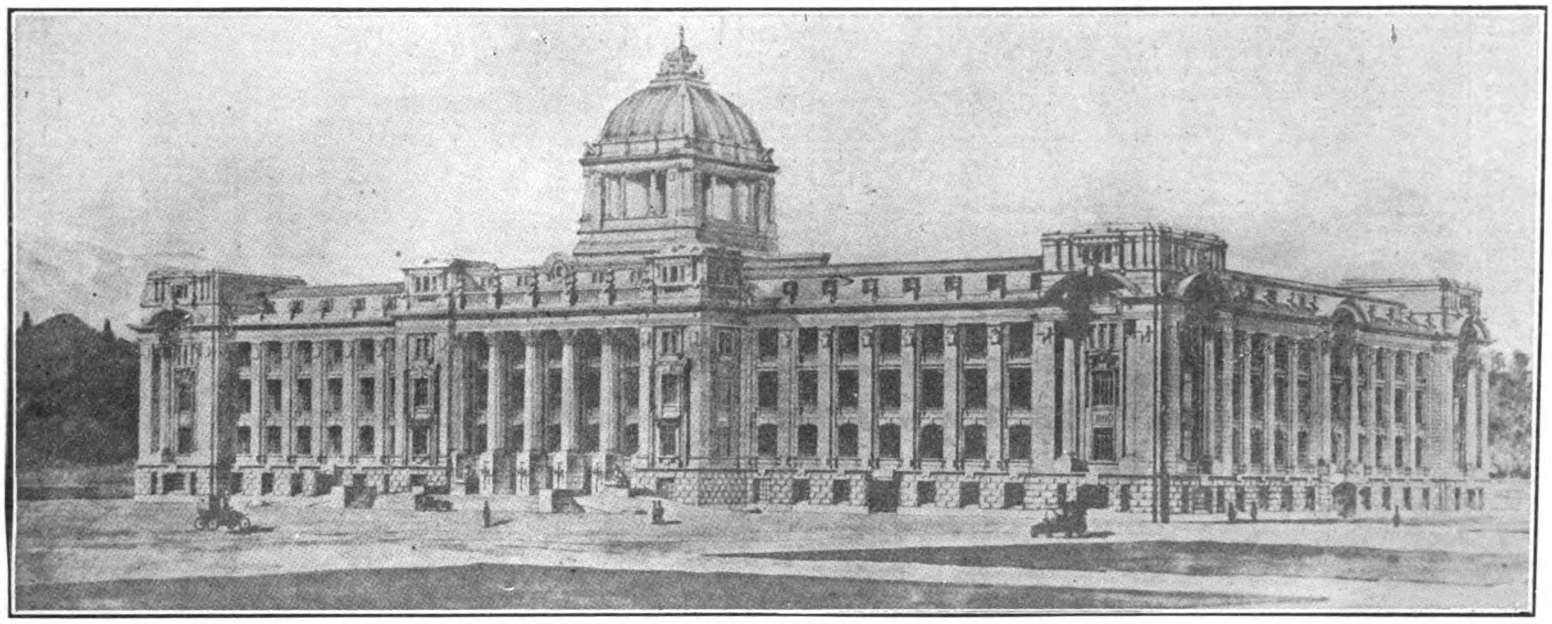
Because of the long distances, the making and up-keep of these roads is not only most difficult, but also very costly, especially now that the work has to be done by paid labor. And besides, a single coast road is not sufficient for the longer distances ; and it is only a cheap and swift communication such as a tramway, for instance that can cope with the ever increasing traffic. Especially is this the case in connection with the land lying between Pontianak and Sambas, covering a distance of 220 kilometers and which is greatly in need of improved means of communication. A tramway through it then would in every respect be likely to bring about a higher degree of prosperity.

With regard to the motor traffic, which has ever since the middle of 1913 been rapidly increasing between Singkawang and Pontianak, it is safe to suppose that at any rate for the next 10 years the quantity of traffic will show a growing tendency. Of course it is unlikely that a tramway would immediately absorb the whole of the transport, as it will take some time to make the people adapt themselves to the new vehicle. The dangers and losses, however, to which goods are exposed by sea will aid considerably towards the choice of a quick and safe tramway for the transport of goods.

Besides the economical use of the projected tramway, there are yet other interests which it will serve. It will perceptibly lighten the task of government, thus bringing indirect financial advantages as well. From a political point of view too the tram will be of great importance, in uniting the different influences emanating from the various peoples with those of the authorities at Pontianak. As a result of the Dutch line of conduct during the war the Chinese have developed a strong feeling of sympathy and esteem for the Dutch government.

Public Works in Korea

ROAD CONSTRUCTION AND HARBOR IMPROVEMENTS



New Government General Offices to be completed in 1924

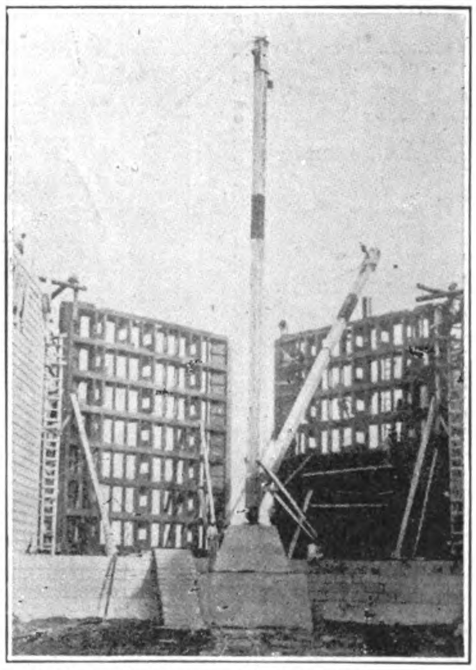
THE execution of the first programme for the projected network of State highways, which had been going on since 1911 as a seven-year consecutive work and embraced the construction of 34 State roads of the first and second class, measuring 685 *ri*, improvement of four streets in the city of Keijo, and the building of an iron bridge across the Kan-ko (River *Han*), was successfully accomplished in October, 1917, at a cost of Y.10,000,000. This, in addition to the roads constructed by Provincial Governments with the aid of the Central Government, brings the total length of first and second-class highways already completed to a little over 1,270 *ri*, making quite a marked effect upon the system of communication connecting the different provinces.

When the completion of the first programme was in sight, a second programme to construct 25 first and second-class roads, measuring 477 *ri* in all, and to build nine bridges across certain important rivers, at the cost of Y.7,500,000, was projected. This work was begun in October, 1917, on the completion of the first program, and is to continue till the year 1922 as a six-year consecutive work.

Although the government-general is primarily responsible for the construction of first and second-class roads, it is permissible for any provincial government, if desirous of taking up the work to meet local needs too pressing to wait for it to be done by the government-general, to carry out the construction of such roads at once. In such case the government-general gives financial aid to the province, provided the local government takes care that the road comes up to the standard required by the government-general.

With regard to third-class roads, provincial governments are directly responsible for their construction and must meet the necessary expenses, but the plan of the proposed roads must first be submitted to, and obtain the approval of, the government-general, so that they may be made in conformity with the general plan laid down for road construction throughout the peninsula.

Of the projected network of state roads measuring 5,900 *ri*, first and second-class roads measuring 892 *ri* have already been built by the government-general, the expenditure being defrayed from the state funds, while first, second and third-class roads measuring 2,697 *ri* have been made by the provincial governments. In carrying out this work they received subsidies from the government-general for 497 *ri*, the remaining mileage being constructed at local expense and by means of contributed labour or *corvée*.*



Lock Gates in Course of Construction, Jinsen (Chemulpo) Harbor Works

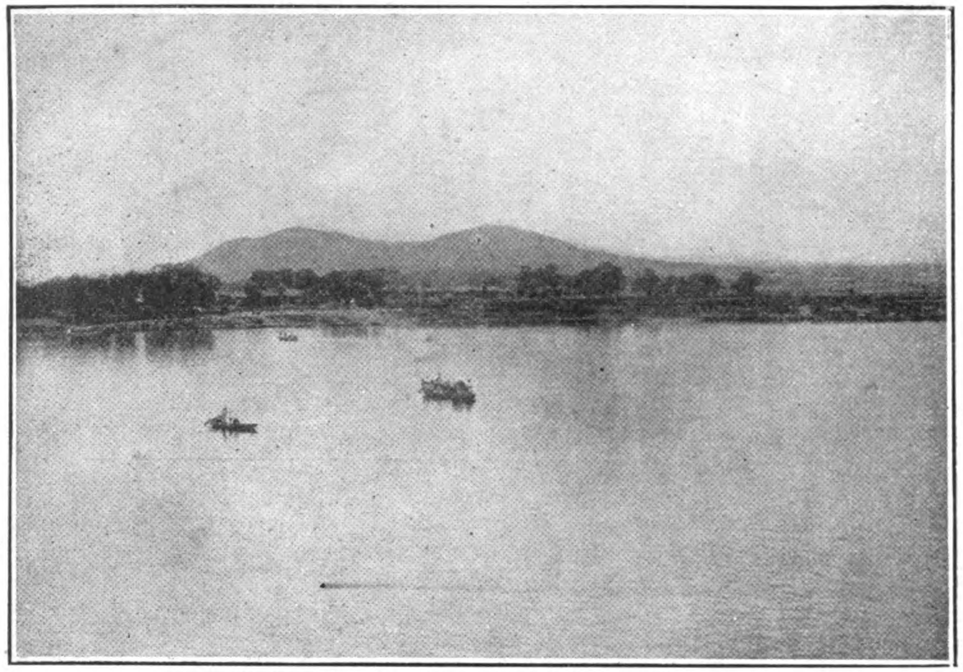
Street Improvement †

As the first program of reconstruction in Keijo, a plan was drawn up for a seven-year consecutive work at an estimate of Y.2,300,000, by which thirteen principal streets, 4 to 15 *ken* wide and measuring 6,744 *ken* in all, were to be improved, and this has been in the course of execution since 1913. Meanwhile, it was found that the estimate made was more than sufficient for the work, so part of the second program, comprising three streets 8 to 10

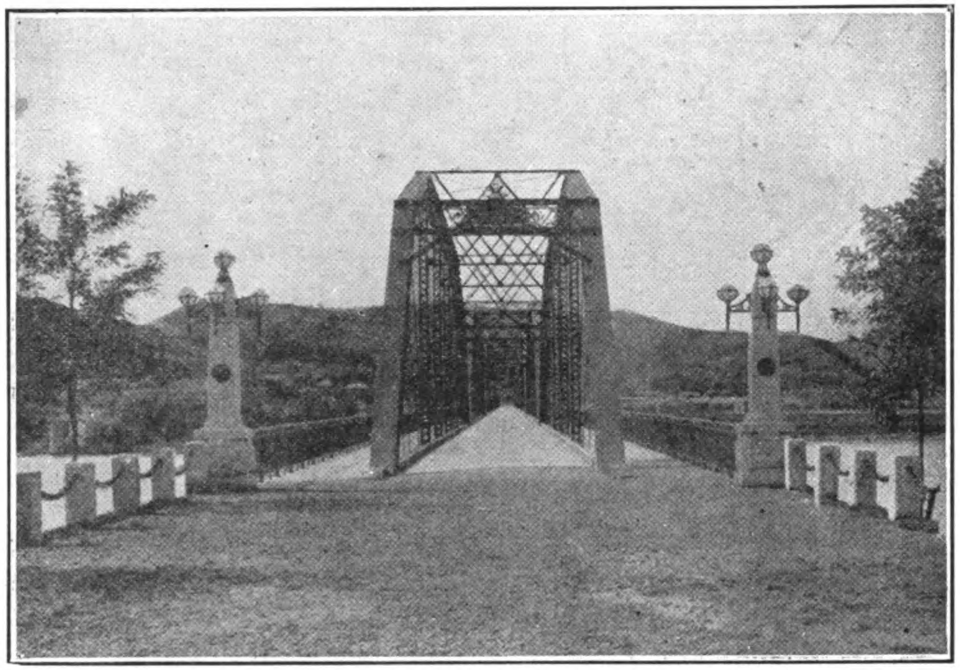
* The custom of *Puyok* (賦役), contribution of labor for road construction or other public works, has been in existence for ages past, but, in the course of time, it became greatly abused, and most of the *yangban*, the literati, and influential people secured exemption from the service. At present the burden is equally borne by all, though those not capable of contributing labor are permitted to liquidate the demand on them by the payment of its equivalent in money.

† Street improvement in cities and towns is carried out either by the government-general or by the provincial governments. The improvement works in the cities of Keijo and Chinkai are undertaken by the former.

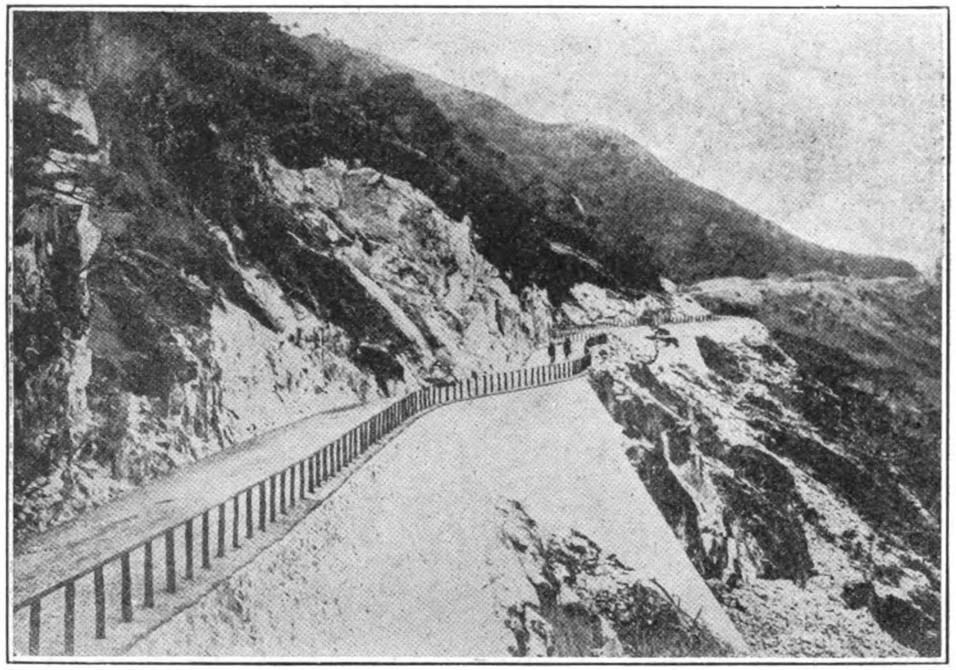
PUBLIC WORKS IN KOREA



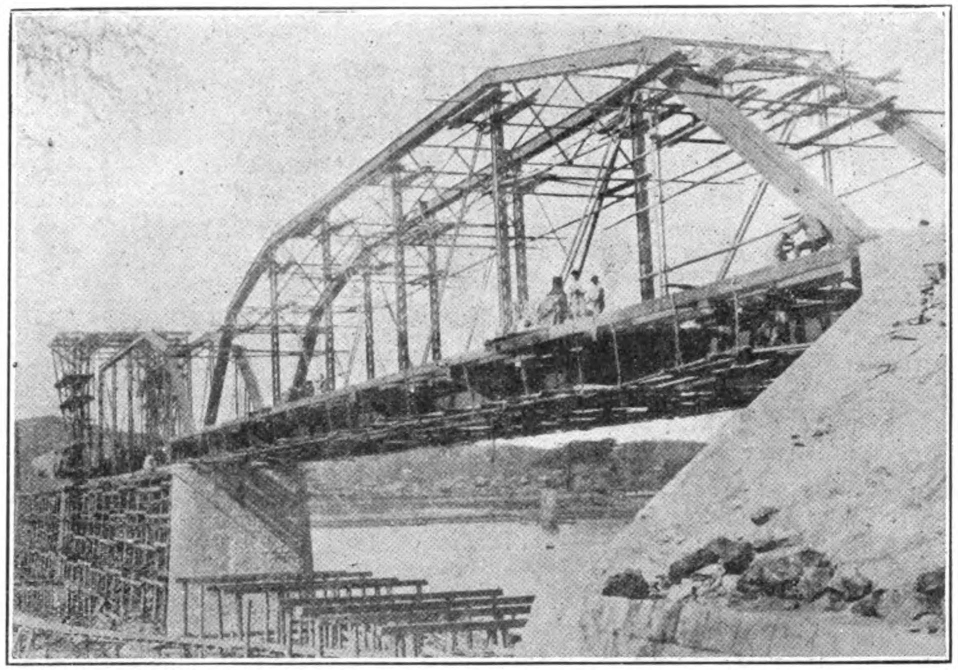
Before the Construction of the Iron Bridge



New Steel Bridge over the Main River



New Road Construction, Kwaiyan District, North Chusei Province



Hanko Iron Bridge in Course of Construction

ken in width and 881 *ken* in length, was added on to the first program. At the end of the fiscal year under review, seven streets, measuring 4,948 *ken*, and certain other improvements had already been completed at the cost of Y.1,560,000.

In Chinkai, the first program of reconstruction work, which has been going on since 1912, at an estimate of Y.318,000, came to an end in the fiscal year under review at the actual cost of Y.263,000. The amount remaining, Y.54,000, was spent in constructing a road between Shogen and Kendo because of its unmistakable importance with regard to the development of Chinkai.

In provincial cities and towns, street improvement is carried on by the provincial governments under the approval of the government-general with state subsidies, or with local funds and contributed labor. During the year under review, government approval for this purpose was given to Kankyo, Chosin, Mitsuyo, Heiho, and Ranan. The towns of Shoshu, Hoko, and Shunsen are now at work on street improvement, having been permitted to take it up in previous years. For Shingishu, a plan to improve the streets and sewerage system as a two-year consecutive work at a cost of Y.48,000 was submitted, and the government-general not only approved the project but agreed to assist by meeting half the total expenditure. The allotted work for the fiscal year under review was satisfactorily accomplished at a cost of Y.26,000.

Old Street, Heijo (Nyong-yang)

Improved Street, Heijo

Harbor Improvement

Of the harbor improvement which has been going on, since 1911, at Jinsen and five other ports as a nine-year consecutive work at an estimated cost of Y.9,831,829, the work at Chinnampo and Heijo has already been completed ; but at Jinsen it was found necessary to enlarge the project, so work on a second program was started at an estimate of Y.1,750,000 as a four-year consecutive work, thereby making the total estimate for general harbor improvement Y.11,581,829, spread over ten consecutive years.

In Fusan, though a large portion of the work was accomplished by the end of the previous year, during the fiscal year under review it was not possible to carry on the work as satisfactorily as before on account of the scarcity of iron material, and some part of the project (about one per cent.) had to be postponed to the fiscal year following. Of the work accomplished in the fiscal year, the construction of Pier No. 2 was the most important. This pier has a width of 21 *ken* and a length of 200 *ken*, and has the railway extended to it, thereby affording direct connection between trains and steamers. As the depth of water at the pier is from 27 to 36 feet, it can easily accommodate two steamers on either side from 7,000 to 20,000 tons each. When the pier is open to use, it is easy to imagine what an important role the port of Fusan will play in the Far East as a terminal of the continental railway traversing both Europe and Asia.

In Jinsen, where a wet dock is under construction, the work on the quay, wall, storage, and lock-gate having been completed by the end of this fiscal year, only the dredging of a small portion of both fairways and the inside of the wet dock is left for the fiscal year following.

However, as the tidal current in the port of Jinsen is too rapid for the safety and convenience of ships entering and leaving the wet dock, a second program for the construction of a stone wall between Jinsen and Rose Island to provide a basin for small boats, the widening of the channel, and the completion of land equipments was started during the fiscal year under review.

In Genzan, the improvement work is progressing smoothly. Reclamation, dredging, wall construction, setting up of caissons, construction of two breakwaters, improvement of the road connecting the railway station with the water-front, taken altogether, show a development of about 52 per cent. of the whole work.

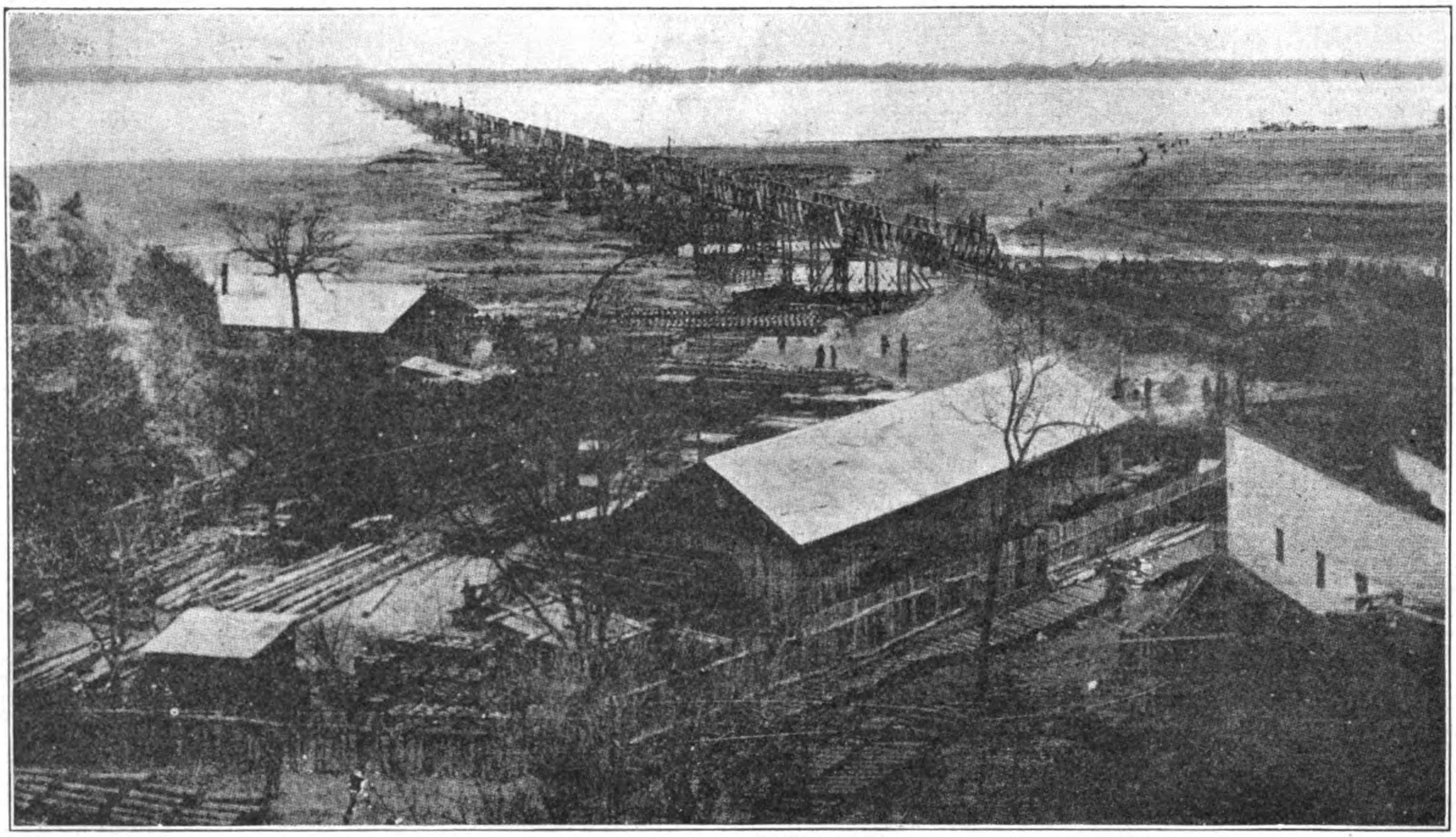
Besides the above-mentioned ten-year consecutive work of harbor improvement undertaken by the government-general, the four-year consecutive work of breaking rocks under the water in the port of Jinsen, which has been going on since 1914, came to a successful termination in the fiscal year under review, resulting in the removal altogether of 13,300 tons of rock and 59,400 tons of gravel.

The expenses incurred during the fiscal year under review for the work of improvement and equipment of harbors other than those already mentioned amounted to Y.101,900, the ports benefited being Kunsan, Mokpo, and Chinnampo.

River Investigation

Although the general exploration of the 13 large rivers of the country was started in 1915 and was completed in the same year, the necessity of obtaining particular information about them, in order to draw up a plan for their improvement and utilization, soon became apparent, and a program was made in 1916 for their actual survey, beginning with (1) those rivers watering the greater portion of the farming area, and (2) those subject to natural calamities, such as floods, etc., oftener than others, but still not so difficult or expensive to improve as others ; and the practical survey and systematic investigation of them were started in the same year as a ten-year consecutive work. For the fiscal year under review, a sum of Y.40,000, as in the previous year, was apportioned to meet the expenses for river improvement, and the actual survey of part of the Ryuko and Sainei, as well as the execution of minor improvements to several rivers, was carried out in the year 1917.

The Yellow River Bridge



General View of the Old Bridge

THE Chinese ministry of communications invites sealed proposals from bridge constructors for designing and building a new steel bridge about 2,800 meters in length across the Yellow River (Hwang-Ho). Proposals will be received up to noon of June 30th, 1921, at the office of the Peking-Hankow Railway, Peking, China. Plans, rules, and specifications can be obtained from the following offices :—

PEKING : Peking-Hankow Railway, American, British, Belgian, French, Italian and Japanese Legations.

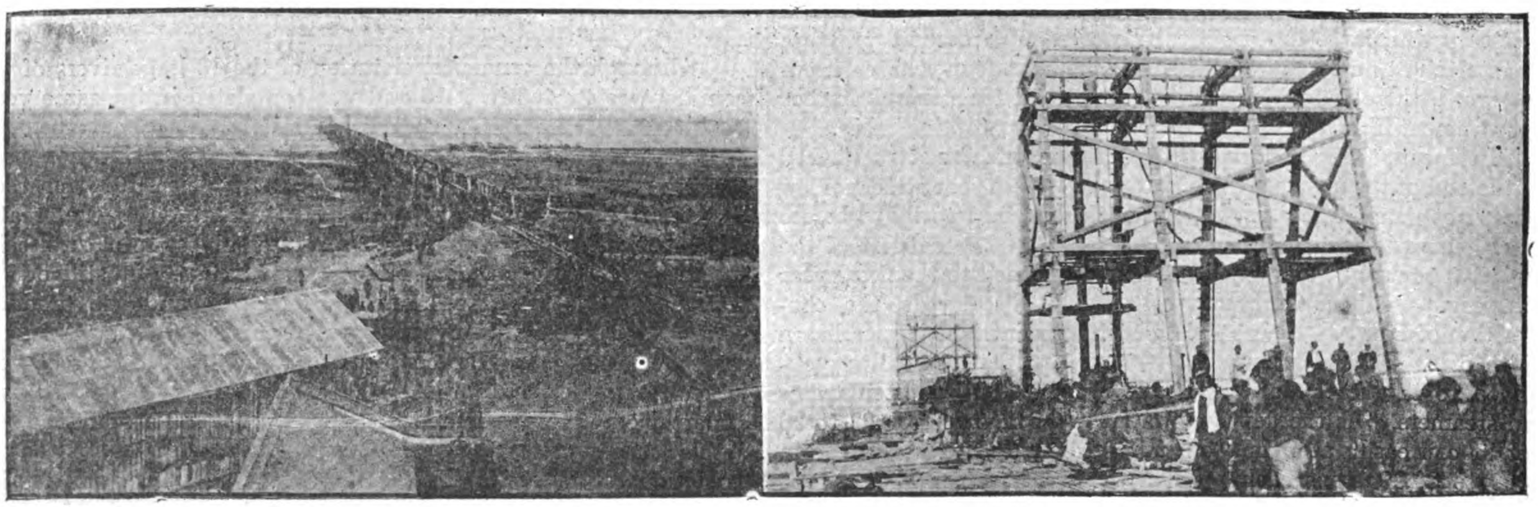
FOREIGN : Chinese Legations, Washington, London, Brussels, Paris, Rome and Tokyo.

All applications for same must be accompanied with £6.

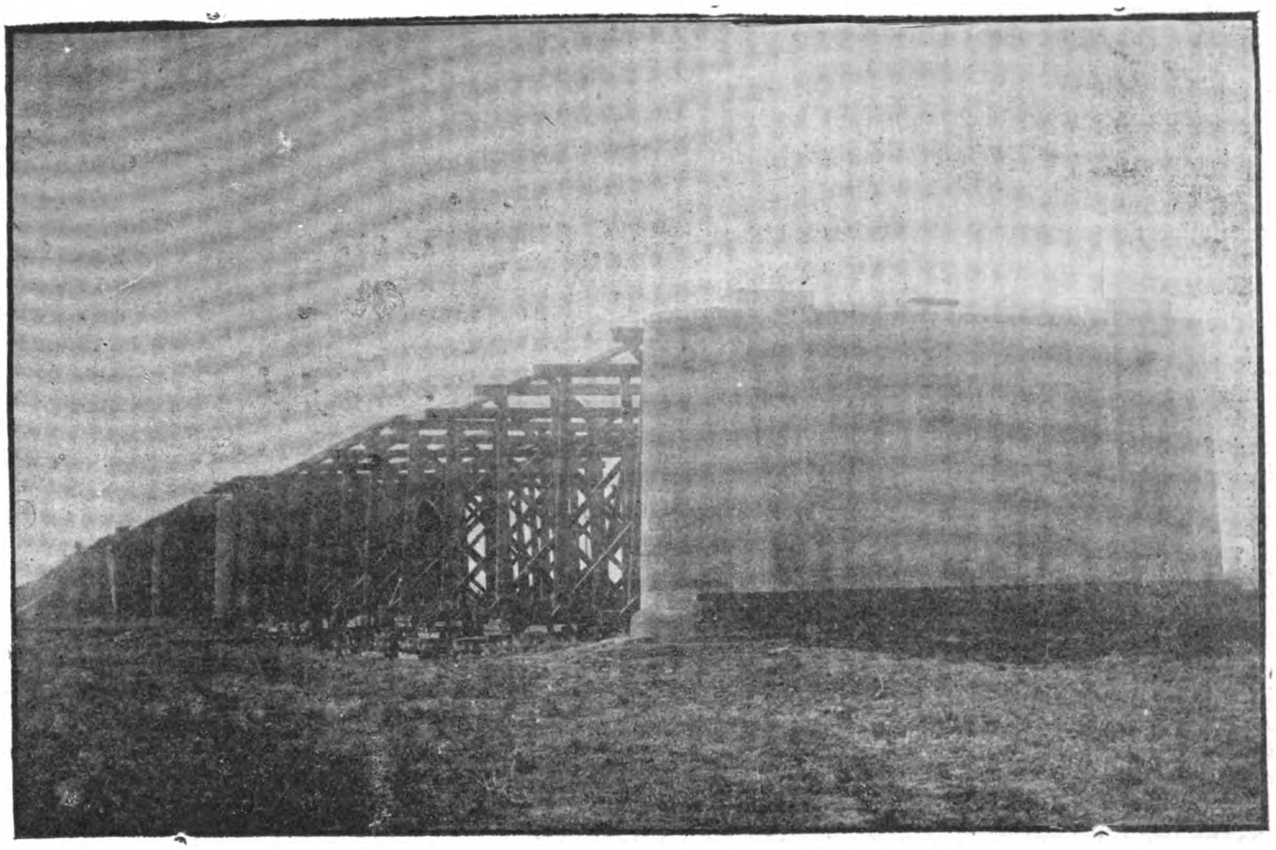
PEKING-HANKOW RAILWAY ADMINISTRATION.

Information about the construction of the old bridge has been very limited. At the time of its completion the following information was given to THE FAR EASTERN REVIEW by the French engineer-in-chief in charge of its construction.

"This structure is 3,010 metres long. The construction of this bridge was a unique feat in engineering and one on which the eyes of the engineering world was earnestly fixed. It is about 6.25 meters above high-water level, and is of steel throughout, the massive girders being supported on sets of screw-driven tubular piles. The steel piles were screwed into the bed of the river by means of hand capstans manned by squads of coolies. In fact all bridges are of steel and like construction, while the approaches and other masonry work are of concrete. The bottom end of each pile has a tooth point with a large inclined blade



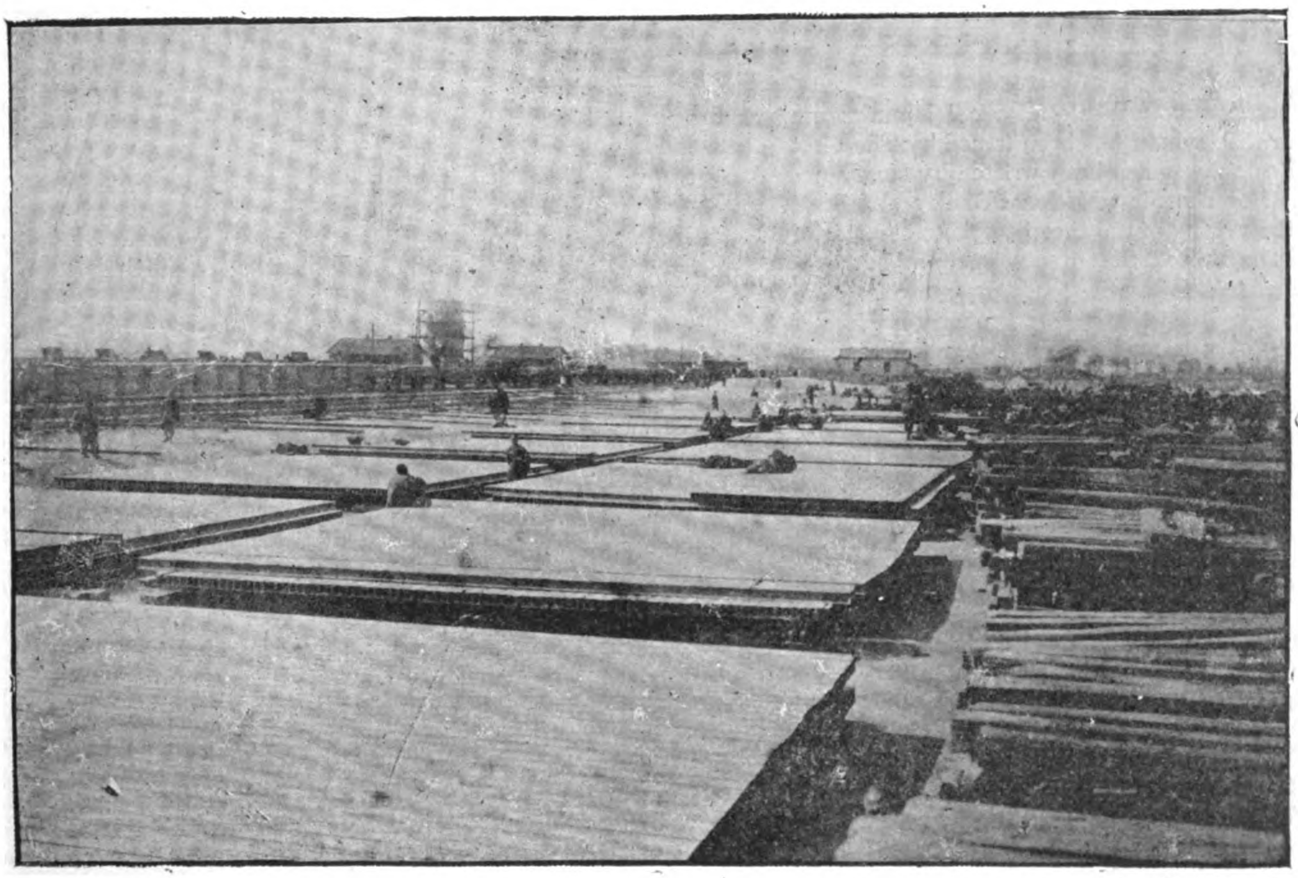
Girder Construction and Sinking Screw-Driven Piles for the Old Yellow River Bridge



General Type of Pier Construction, the Old Yellow River Bridge

above it, not unlike the tip of a corkscrew. To each point was clamped an enormous grooved pulley, around which was wound a wire hawser. One end was led to one of the capstans, and then the coolies heaved away and the work of screwing began. The rotary motion of the piles, with the corkscrew blade, naturally screwed the pile down into the mud till the pulley was level with the platform on which the workmen were standing. When the pulley reached this platform, another length of pile was bolted together, the pulley raised to the upper flanges, and the screwing resumed. When the piles had been screwed to a sufficient depth, say 12 to 15 meters, the water was pumped out from the interior. The pile was then filled with concrete. Wooden piles were then driven around the current side of the piers in the shape of a triangle, with the points to the current, as a protection to the structure. Huge beds of tree branches, lashed together with wire, were then sunk around the steel piers, and on these beds hundreds and hundreds of tons of rock were thrown. This was reckoned to give more solidity to the river bed where the piers were driven, and possibly prevent the river washing away the foundations, if such the shifting bed of the river can be called. The steel piles were placed in sets of four, six, eight and ten, and each pile is joined by stanchions and girders of great strength, and finally each set of piles is spanned by an enormous girder on which the rails are laid. Half of this bridge was built in France, the other half in Belgium.

"The river bed is one gigantic quicksand and during the construction of the bridge many piles were sucked under as well as platforms supporting machinery. Breakwaters of stone have been built along the banks of the river to prevent the undermining of the bridge foundations, and either end of the structure is protected with stone-faced dykes to prevent the water washing away the dykes."



Mobilized Millions of Tons of Material Utilized for Rail and Bridge Work

The governor of Honan in 1909 called attention to the state of this bridge. It seems that the stream is undermining the pillars supporting the bridge and the safety of the structure is threatened. Aside from this the bridge is said to be altering the current, so that serious trouble may be looked for.

In connection with the advertisement for the new bridge, the minister of communications has issued the following letter for public information:—

"The attention of

this ministry has been called to the publication of an article of the *Morning Post*, containing allegations about the overestimate of the Yellow River Bridge. As such allegations may tend to create misunderstandings, the following statement of facts about this subject is furnished for public information :—

"The Yellow River Bridge was completed in 1906, and it was only meant to be a temporary structure. With a view to prepare for its ultimate replacement by a permanent one, the director-general of the railway department in 1913 had started a sinking fund for this purpose. The decision was then made to set aside $1,000,000 each year out of the surplus of the Peking-Hankow line as special reserve, so that in time the accumulated sum would be sufficient for the construction of a new bridge. It was unfortunate, however, when Minister Yeh assumed office in last August, he found all the cash funds specially reserved for this purpose had been misappropriated, leaving only $2,000,000 in Peking notes, and $178,100 in cash, whereas there should have been $791,000 in cash, $2,250,000 in Peking notes, $1,635,000 in Seventh Year Domestic Bonds, and $483,000 from matured bonds.

"Finding the sinking fund so depleted, and realizing that time prevented the original plan of providing funds from being carried out, the minister decided, as the reconstruction of the bridge has become more and more imperative, to call for tenders for the work. This has been done, not only in China but also in foreign countries, throughout the world, and the various foreign ministers in Peking have been requested to give assistance in this regard. Already numerous applications for details have been made by leading foreign bridge constructors and their estimates and plans must be in the hands of the ministry by the end of June, 1921.

"Before tenders come in no-one at this time knows how much the bridge will cost. It can only be determined after the character of the bridge has been decided upon. Therefore the charge that this ministry has overestimated the cost of reconstructing the bridge by some $4,000,000, and the baseless declaration that $6,000,000 would be sufficient for this undertaking is absolutely false."

Some idea of the old bridge and methods of construction can be obtained from the accompanying views taken when it was building.

Wool and Wool Manufacture

A VERY interesting booklet upon Wool and Wool Manufacture written primarily for the layman has been issued by The First National Bank of Boston. It has been written by Mr. James Paul Warburg of the staff of The First National Bank and follows the wool industry from the raising of the sheep to the marketing of the finished products. The United States grows only about one-half of the wool consumed in this country and 70 per cent. of the wool imported comes into the United States through the Port of Boston. About one-half of this amount, or 35 per cent. of all the wool imported into the United States, is financed by The First National Bank of Boston, which it is evident speaks with authority concerning the industry. Part 1 of the booklet is devoted to the raw material and covers such subjects as sheep raising, shearing and marketing of fleece wools and general classification of wools. Part 2 covers the various processes of worsted manufacture. Part 3 covers woollen manufacture. Part 4 is devoted to the financial aspect of the wool industry. This section gives in brief the methods of financing from the raisers of sheep to the distributors of the manufactured products. The booklet is written with as little technicality as is possible and contains only such statistics as are necessary for the adequate understanding of the subject. It is generously supplied with illustrations. This booklet will be found of great interest to those who are engaged in any branch of the wool industry and to those indirectly connected therewith. A copy may be obtained by addressing the Commercial Service Department of The First National Bank of Boston.

Japan to Adopt Metric System

THE Department of Agriculture and Commerce has decided, according to the *Chuo*, to adopt the metric system of measurement, and for this purpose a special committee has been appointed to start preliminary investigations. Taking advantage of the government decision, architects throughout Japan have organized an association with a view to introducing the metric system in the construction of all Japanese houses whether for dwelling or any other purpose.

"In constructing Japanese buildings, considerable inconvenience is experienced because of the absence of unity in the system of measurement," says Dr. Sano, of the Tokyo Imperial University and a member of the above government committee, as quoted by the *Chuo*. "In order to improve the efficiency of architects, as well as in the interests of economy, it is highly advisable to unify the system of measurement. Investigations have thus been started with a view to introducing the metric system in Japan. The result will be made public in March next, when the new system will be adopted first by the association of architects. According to the government authorities, the new system will thoroughly replace the old Japanese measurement system within ten years."

Chinese Cotton Displaces American Cotton

(Special Correspondence of "The Far Eastern Review")

New Orleans, La., November 15.—Chinese cotton growers are steadily becoming independent of the American staple, it is stated here, where there is considerable interest in the development of cotton mills in China. Here are some startling figures:

CHINA'S CONSUMPTION OF AMERICAN COTTON

1912	$3,175.504
1919	1,379,654

Cotton seed imported from the United States has produced a staple that competes successfully with the parent fibre.

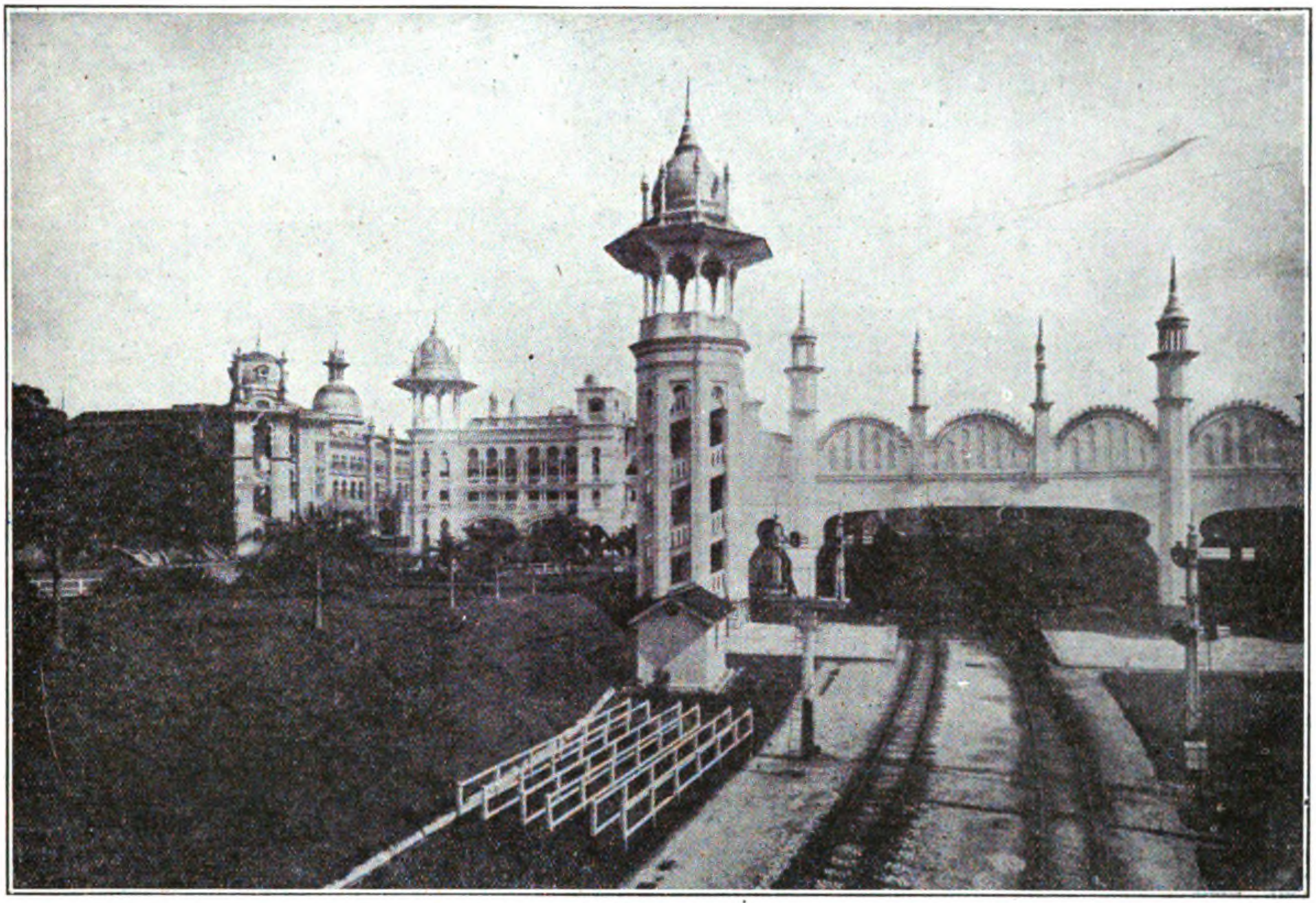
"Keep the Cotton and Sell the Cloth"

(Special Correspondence of "The Far Eastern Review")

Greenville, S.C., November 8.—Chinese competition in the growth and manufacture of cotton has drawn the attention of planters to the speech at Maplewood, N.H., of Daniel H. Douty, advising eastern cotton mill men to unite with growers in a movement "to keep the raw cotton, manufacture it and sell the cloth." Greenville recently enjoyed a visit from Mr. C, C. Nieh, president of the Chinese chambers of commerce and the most prominent Chinese cotton magnate. In a speech made at the Southern Textile Exposition, the Chinese visitor gave facts and figures showing that in a few years China has doubled the number of her spindles. In Tientsin, alone, ten mills were added within a year. In his address Mr. Nieh stated that in the past year the Chinese have purchased forty-five cotton mills in the United States and plan to purchase a great deal more. One of America's leading cotton experts is now in China, he said, to teach the people here to improve the growing of cotton. Over 2,500,000 spindles are now running and Mr. Nieh expects China soon to pass the 3,000,000 mark. Ten years ago there were only 900,000 spindles in China.

Federated Malay States Railways

NOTES FROM 1919 REPORT



Central Offices, Hotel and Railway Station, Kuala Lumpur, F.M.S. Railways

THE working of the Federated Malay States Railways during the year 1919 produced a net profit of $3,310,446.62, after providing for the contribution to the imperial government for war purposes, compared with $3,399,358.19 in 1918, representing 2.67 per cent. on the total capital expenditure against 3.12 per cent. in 1918. The contribution to the imperial government for war purposes has been fixed at the same figure as for 1918, viz., $360,895.22. The continued rise in the price of materials and labor seriously affect the cost of constructing and equipping new railways. Locomotives, which in 1914 were bought for £4,299, now cost £10,475 whilst rails are £16 per ton as compared with £6 15*s.* and steel bridge work £29 17*s.* per ton as against £12 7*s.* and other materials in like proportion whilst local labor costs have increased by 30 per cent.

No new lines were opened for traffic during the year. The total mileage of running lines (reduced to single track) open on 31st December, 1919, was 1,002 miles 55 chains, and of running lines and sidings 1,131 miles 75 chains as compared with 1,001 miles 76 chains and 1,128 miles 9 chains at the end of 1918.

Capital Account.—The total capital expenditure to 31st December, 1919, is $123,681,858.07. The expenditure during the year was $14,709,733.64 as compared with $3,584,111.30 in 1918. Of the current year's expenditure, the large amount of $5,952,735.63 falls under the head of rolling stock, while lines not open for traffic (including widenings and additions) absorb $7,655,202.28.

Revenue Receipts and Expenditure.—The receipts from all sources amounted to $14,957,468.53 compared with $13,106,-512.67 in 1918, an increase of $1,850,955.86 or 14.1 per cent.

The revenue expenditure on all accounts, excluding only the contribution for war purposes, amounted to $11,286,126.69 compared with $9,170,147.70, an increase of $2,115,978.99, or 23.1 per cent.

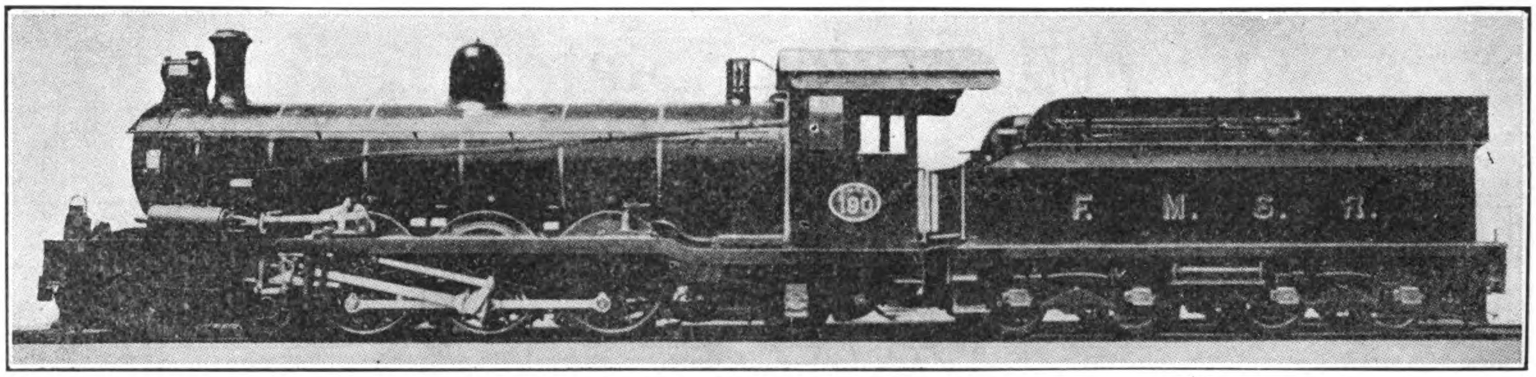
Railway Working—Receipts.—Passenger receipts increased by $1,114,105.40 (17.30 per cent.) and the number of passengers carried has increased by 819,149.

The percentages of increase are :

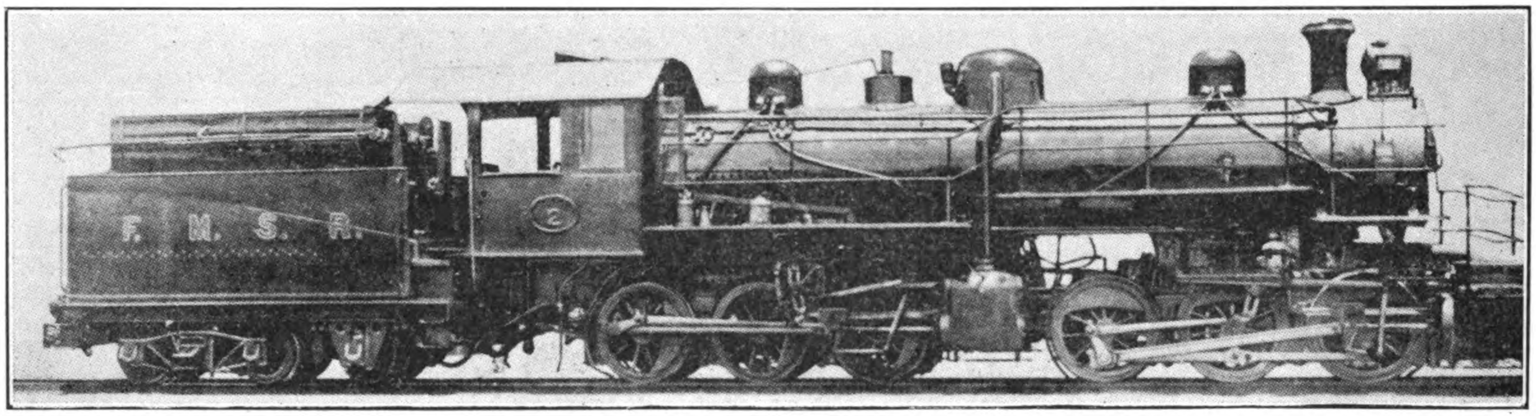
1st Class...	33.41 per cent.
2nd ,, ...	30.56 ,,
3rd ,, ...	11.41 ,,

Goods train receipts are 9.04 per cent. higher than in 1918. The most noticeable item is rubber, which has increased by 30 per cent., and it is interesting to note that the receipts under this heading for 1919 are practically double those recorded for 1916.

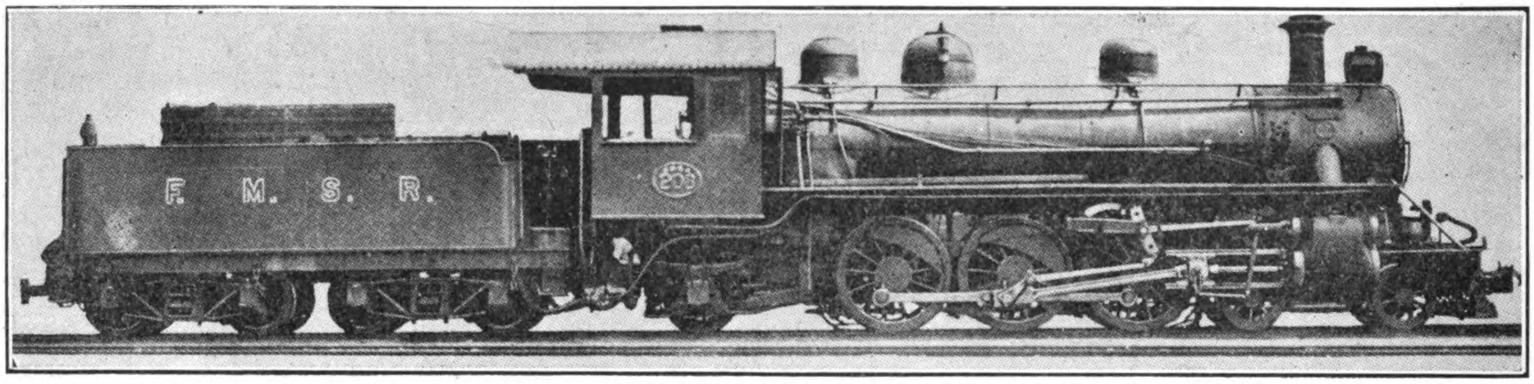
Expenditure.—The total expenditure shows an increase of $1,976,313.74 or 24.5 per cent. over 1918, while the percentage to



British 4-6-2 Superheated Locomotive, F.M.S. Railways



Mallet Compound Locomotive built for Russia by the Baldwin Locomotive Works. Two of which were purchased by the F.M.S. Railways in 1919.



4-6-2 Superheated Locomotive Supplied to the F.M.S. Railways in 1919 by the Baldwin Locomotive Works.

the total traffic receipts increased from 66.08 per cent. to 72.34 per cent.

The increase under maintenance and renewal of ways and works is $268,821.67 (11 per cent.). The amount included under this abstract in respect of special services chargeable to revenue is $498,062.06, a sum greater by about $80,000 than in 1918. The most notable items are the increases in maintenance of signalling and of stations, depots and offices. Under maintenance and renewal of rolling stock there is a total increase of $471,133.73 (39.7 per cent.). The increase in locomotive running expenses is not so great as in other abstracts, amounting in all to $35,227.23, or 1.64 per cent. There are increases on all heads of account except fuel, and the expenditure on lubricants was 41 per cent. higher than in 1918, due entirely to the rise in prices. Fuel shows a decrease of $72,801.57, which is accounted for by the fact that considerably less imported coal was purchased in 1919 than in the previous year. The cost of fuel per engine mile is reduced from 31 cents to 28 cents, and the total running costs per engine mile are 46 cents for 1919 compared with 47 cents in 1918. Traffic expenses are higher all round, and there has been a considerable increase in the amount payable for compensation, the actual expenditure under this head being more than double the sum paid in 1918.

Port Swettenham

During the year, 63 ocean steamers called at Port Swettenham with import cargo as against 30 during 1918, and 32 ocean steamers called for export cargo as against 9 during 1918. These figures are exclusive of the British India Company's steamers which call regularly at the port. Forty-four thousand five hundred and fourteen tons of rubber were exported through Port Swettenham during the year as against 32,011 tons in 1918 and 35,587 in 1917.

Ways and Works Department.—The following renewals were made: 1,004 rails, 23 points and 70 crossings. Ninety-eight thousand and forty-two cubic yards of ballast were supplied and 70,525 cubic yards of earth for cessing deposited on banks. In addition to above, 1,175 cubic yards of stone and 356 cubic yards of sand were used for special service works as compared with 2,171 cubic yards of stone and 27,639 cubic yards of sand in 1918.

Ways and Works Depot.—This establishment has continued its usefulness and the internal arrangements of

the depot have been expanded. During the year machinery ordered from Japan and America was received to the value of $38,996.56.

The following machines were installed :

One large planing machine ;

One vertical drilling machine ;

Three small drilling machines ;

One emery grind-stone ;

One lathe ;

One hand-screwing machine.

The depot is now in a position to manufacture all permanent way fittings required by the Construction Department and open lines.

MAINTENANCE.—The cost of maintenance per mile of line open per week was $37.48 as compared with $34.36 in 1918. The expenditure on slips and wash-aways was $20,020.58. The 1,002 miles 55 chains of running miles, together with 129 miles 20 chains of sidings, were maintained in good running order.

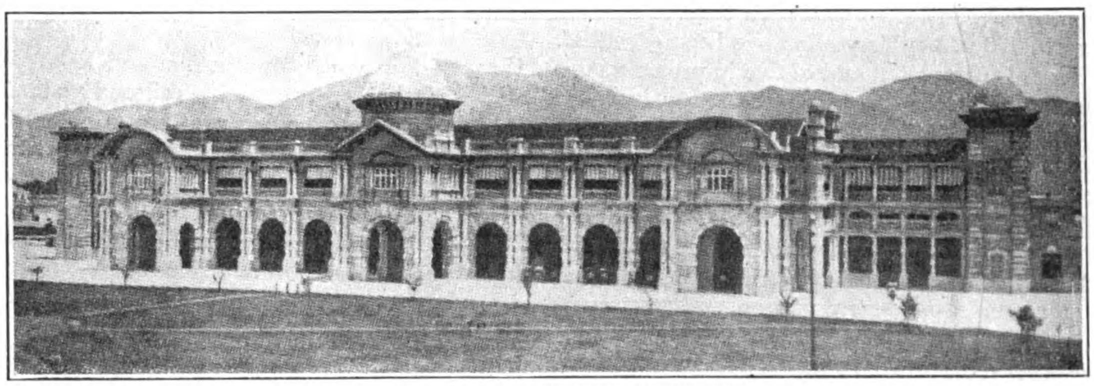
TIMBER DEPARTMENT.—The following is a comparative statement of sleepers purchased during 1918 and 1919 :

Description	1918.	1919.
First class	306,649 ...	186,834
Second class	26,422 ...	21,125
Third class	4,333 ...	3,858
Crossing sleepers	3,926 ...	8,282

The value of 1919 purchases being $409,422.73.

Sleepers sold during the year were 282,951 compared with 203,471 in 1918, the cost being $512,552.39. The book balance on hand on 31st December, 1919, was 133,830 sleepers, the value of which was $236,185.09.

LOCOMOTIVES.—We received 12 Pacific type and two Mallet locomotives built by Messrs. Baldwin, of Philadelphia, United States of America, during the year. Of these, eight Pacific and two Mallet locomotives were added to the stock and the remaining four are under erection. Orders were placed in England for 10 "I" Class, 10 "L" Class and 16 "P" Class locomotives during the year. The open line stock of locomotives, including the steam rail motors, was 185 on the 31st December, 1919, as against 180 on 31st December, 1918. The number of Construction Department locomotives was 21 at the end of the year as against 18 in 1918.



Ipoh Station Hotel, F.M.S. Railways

MILEAGE OF TRAINS AND ENGINES.—The total engine mileage for the year under review was 5,006,936 as compared with 4,811,657 in 1918, an increase of 195,279 miles, or 4.06 per cent. The train mileage was 3,463,405 as against 3,357,979 in 1918, an increase of 111,426 miles or 3.32 per cent. The increase is due to additional trains running.

The average daily miles per engine actually at work was 108.25 as against 110.11 in 1918.

FUEL.—The following table gives particulars of firewood and coal purchased during 1919.

Description of fuel.	Local weights. Pkls.	Kts.	Avoirdupois weight. Tons.	Cwt.	Qrs.	Lbs.
Bakau firewood— Converted at a ratio of 2½ to 1 ton of coal	2,767,025	91 ...	65,881	11	1	15
Jungle firewood— Converted at a ratio of 3 to 1 of coal	1,917½ passangs ...		1,426	14	0	27
Rawang coal— Converted at a ratio of 1.6 to 1 ton of foreign coal	58,348 tons	...	36,467	10	0	0
Foreign coal	—	...	2,800	8	1	8
		Total..	106,576	3	3	22

RUNNING COSTS.—The total running cost per engine mile for the year 1919 was 46 cents (*vide* abstract C).

MACHINERY.—The following new machines were installed at Central Workshops during the year :

Machine Shop	4 Turret lathes 4 Shaping machines 2 Boring machines 12 Turning lathes
Carriage Shop	1 Planing machine 1 Tenoning machine
Wagon Shop	1 Wheel lathe
Coppersmith Shop ...	2 Bolt-pointing machines

COACHING VEHICLES.—No new bogie passenger vehicles were purchased in England during the year, but the bodies of 18 bogie mail type coaches were mounted on underframes received from Japan and turned out. Six bogie mail type coaches were completed, but not turned out, during the year. Twenty-four bogie mail type coaches and one postal sorting van are under construction at Central Workshops. Two bogie first and second-class carriages, three bogie second-class and one bogie third-class have been fitted with upper bunks. Two hundred and twenty-six passenger vehicles were repaired during the year.

MERCHANDISE AND MINERAL VEHICLES.—One hundred and fifty new covered goods, 50 firewood trucks, 50 timber trucks and 100 low sides were built of timber and added to the stock during the year. The following statement shows the cost of these locally-built trucks as compared with the cost of vehicles quoted for delivery from England in 1919 :

	Cost of trucks built locally in timber.	Price quoted for similar vehicles in steel from England, including 20 per cent. for freight erection, etc.
100 Low sides	...£300 each ...	£452 each
150 Covered goods ...	330 ,, ...	547 ,,
50 Fuel trucks ...	315 ,, ...	524 ,,
50 Timber trucks ...	250 ,, ...	420 ,,

It will be seen therefore that by building these 350 vehicles at Central Workshops and using materials obtained from Japan and Canada, we have effected a saving of approximately :

100 Low sides	£15,200
150 Covered goods	32,550
50 Fuel trucks	10,450
50 Timber trucks	8,500

besides which these 350 vehicles were actually at work earning

revenue during 1919 which would not have been the case if we had ordered them in England.

Construction Stores.—During the year stores and materials for railway construction were purchased to the value of $3,594,206.-52, of which the amount paid through the Crown Agents was $2,956,287.40. Value of the stores in hand at the close of the year 1919 was $121,296.08. Indents to the number of 22 and estimated value of $3,171,566.09 were despatched to the Crown Agents.

Construction.—The total expenditure during the year 1919 on construction and surveys of new lines amounted to $7,655,202.28 as compared with $2,354,229.38 during 1918.

East Coast Railway: Kelantan Section.—This railway starts from Tumpat and proceeds southwards towards Kuala Lipis in Pahang. The length of this section from Tumpat to Pahang-Kelantan boundary is 108 miles, of which 32 miles from Tumpat to Tanah Merah were opened for traffic on 1st July, 1915. The work on this section, which was stopped in November, 1914, was recommenced in January, 1918, and the progress made is as follows:

The necessary land has been acquired up to 62½ mile. Jungle has been felled for 29 miles and cleared for 24 miles. Nine hundred and seventy-seven thousand six hundred and thirty-two cubic yards of earth work and 16,589 cubic yards of rock have been executed beyond Tanah Merah. The permanent way has been linked in for 3¼ miles.

The expenditure during the year amounted to $1,423,165.68.

East Coast Railway, Pasir Mas to Rantau Panjang Extension (to Connect with Siamese Railway).—This railway starts from the south end of Pasir Mas Station on the East Coast Railway, Kelantan section, and runs in a north-westerly direction to the Golok River at Rantau Panjang on the Siamese boundary, a distance of 11¾ miles. Work was commenced in February, 1917, and the progress made is as follows:

The necessary land has been acquired. Jungle-felling and clearing has been completed. Out of an estimated total of 848,183 cubic yards of earthwork, 793,976 cubic yards have been executed. The masonry of 18 bridges is completed and of five in progress, and the steel work of one bridge is also in progress. The permanent way has been linked in for 11½ miles, lifted and packed for 11¼ miles. All the buildings on this line have been completed.

The expenditure during the year amounted to $520,205.61.

East Coast Railway: Pahang Section.—This railway starts from Tembeling and proceeds northwards towards Tumpat. The length of this section from Tembeling to the Pahang-Kelantan boundary is 70¾ miles and the progress made on construction is as follows:

Land has been acquired to the Pahang-Kelantan boundary. Jungle has been felled for 48½ miles and cleared for 40 miles. Out of a total of 9,446,949 cubic yards of earthwork, 5,628,894 cubic yards of earthwork and 616,070 cubic yards of rock have been executed. Out of 337 bridges and culverts provided, 116 are completed and 12 are in progress. The permanent way has been linked in for 32½ miles and lifted and packed for 25 miles.

The line from Tembeling to Kuala Lipis (117th to 141¾ miles from Gemas) was handed over to open lines and opened for traffic on 15th October, 1917.

The expenditure during the year amounted to $2,188,164.00.

Perlis Railway Extension (to Connect with Siamese Railway).—This railway, which starts from Alor Star, the capital of Kedah, and runs through Perlis to Padang Besar on the Siamese frontier, over a length of 42 miles, was completed with the exception of eight bridges and was opened for traffic on 1st March, 1918. The steel tops for these eight bridges, which were not delivered from England owing to the war, are now being received and the temporary trestle bridges being pulled down and replaced by steel tops. Certain buildings were also erected during the year at Padang Besar on joint station account.

The expenditure during the year amounted to $65,869.06, but a credit to the amount of $138,387.48 was received from the Siamese Government on account of their half share of works done by this department at the joint station.

Prai Doubling, Wharves, Alterations and Additions, and Purchase of Land.—The doubling of the line from Prai to Bukit Mertajam, a distance of 6 miles and 42 chains, together with sidings and buildings, were completed and handed over to open lines on the 24th May, 1918.

Out of an estimated total of 551,342 cubic yards of earthwork, 467,163 cubic yards have been executed.

Causeway across Johore Straits.—The contract for the construction of the causeway crossing the Straits of Johore between Johore Bahru and Woodlands was let to Messrs. Tópham, Jones and Railton, Limited, in June, 1919, the time allowed for the completion of all the works being 5¼ years. Up to the end of the year the work was almost entirely of a temporary character and considerable progress had been made in the preparation of plant, and the erection of shops, offices, staff quarters and cooly lines, etc. Ten hopper barges for the conveyance of stone from the quarry to the causeway were ordered in England. Four have been delivered and are under erection at Singapore, but had been delayed on account of shipping difficulties and labour troubles and were not completed at the end of the year. One large steam tug has arrived from England and another is on order, while a smaller tug and a steam launch were bought locally. The opening up of the quarry at Pulau Ubin has proceeded very satisfactorily and it is now in a position to begin the supply of both rubble and crushed stone for the works. Permanent work has been begun on the construction of the lock at Johore, and is proceeding satisfactorily. The expenditure during the year amounted to $747,208.91.

Railway Facilities at Harbin

Writing from Harbin in September, U. S. Trade Commissioner Batchelder says that ample freight and passenger services connect Harbin directly with Mukden, Dairen, and Tientsin through the South Manchurian and Peking-Mukden railroads, and with Yokohama, through the railroad systems of Korea and Japan. Sleeping cars and dining cars are attached to many of the trains. Regular daily trains with sleepers run between Harbin and Vladivostok.

The freight equipment is also adequate to handle an addition of 50 per cent. to the existing traffic, and there are 9 unused American locomotives, besides many idle freight and passenger cars. About 150 of the latter are being used as living quarters, the majority having come from the Russian railroads. The improvement in conditions is largely due to the efforts of the Allied Technical Board, under the presidency of Mr. J. F. Stevens. It has spared no pains to secure freight from shippers of beans and other commodities, and has in some cases moved freight cars 1,000 miles in five days.

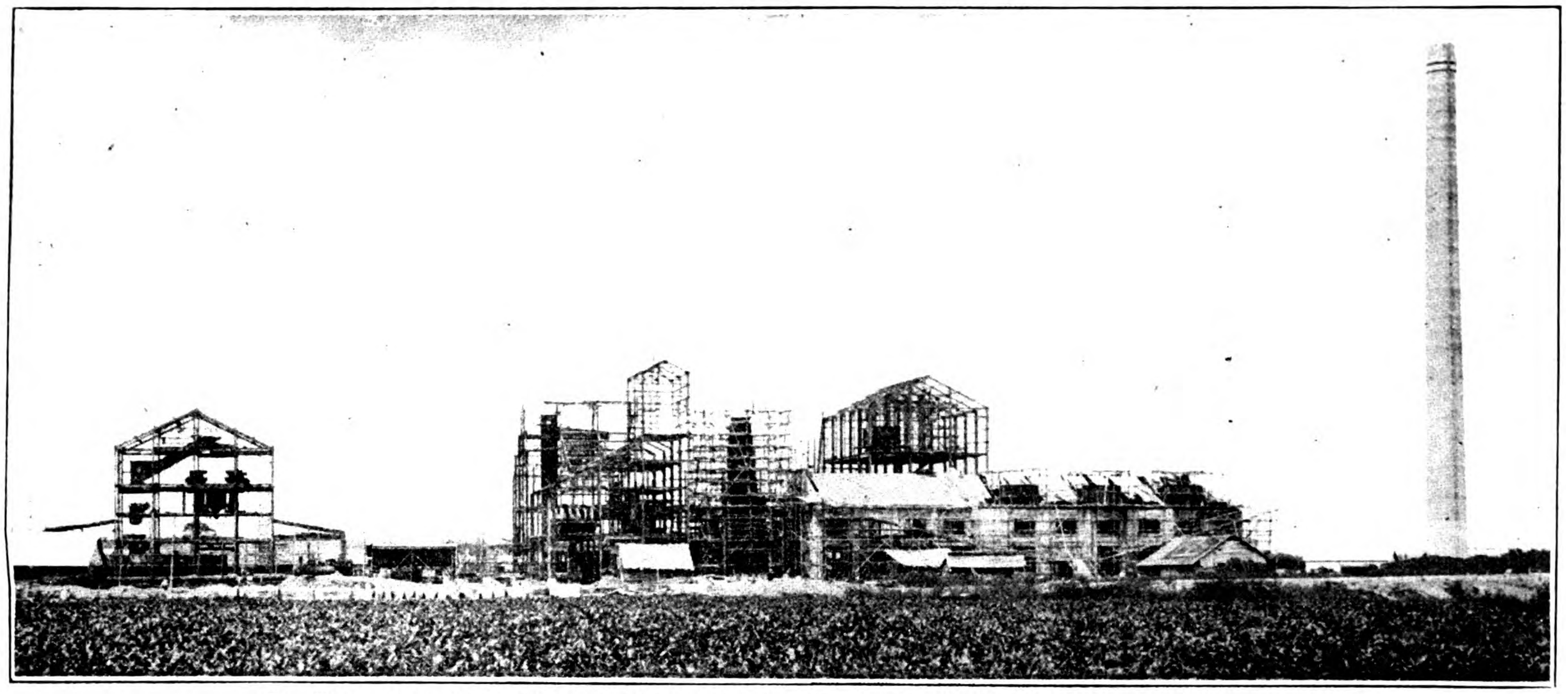
The result of these methods, when applied to railroads free from military control, is shown by the following table of cars loaded and moved during the months mentioned: January, 180; February, 232; March, 262; April, 254; May, 340; June, 455; July, 482.

If the traffic were to increase materially, there are numbers of cars and locomotives which could be repaired for service.

Since 1918, however, there has been but little regular freight traffic over the Trans-Siberian Railway, and for some time through traffic has ceased owing to military operations. It is alleged that regular trains are running from Irkutsk to Moscow.

Since the difficulties of the Chinese Eastern Railroad have been remedied, the impediments to trade are merely political, though if transportation were to begin to the interior of Siberia, the Chinese Eastern Railroad would need new equipment of many kinds—ties, rails, and many other items of maintenance. It is probable that the requirements of the other portions of the Trans-Siberian system would be even greater.

It is interesting to note that the train service is being carried on exclusively by Russians, and that they have profited by the training given them by the American railway engineers.



The Plant of the Hokkaido Sugar Company under erection at Obihiro, Tokachi Prefecture, Japan

American Beet Sugar Factories in Hokkaido

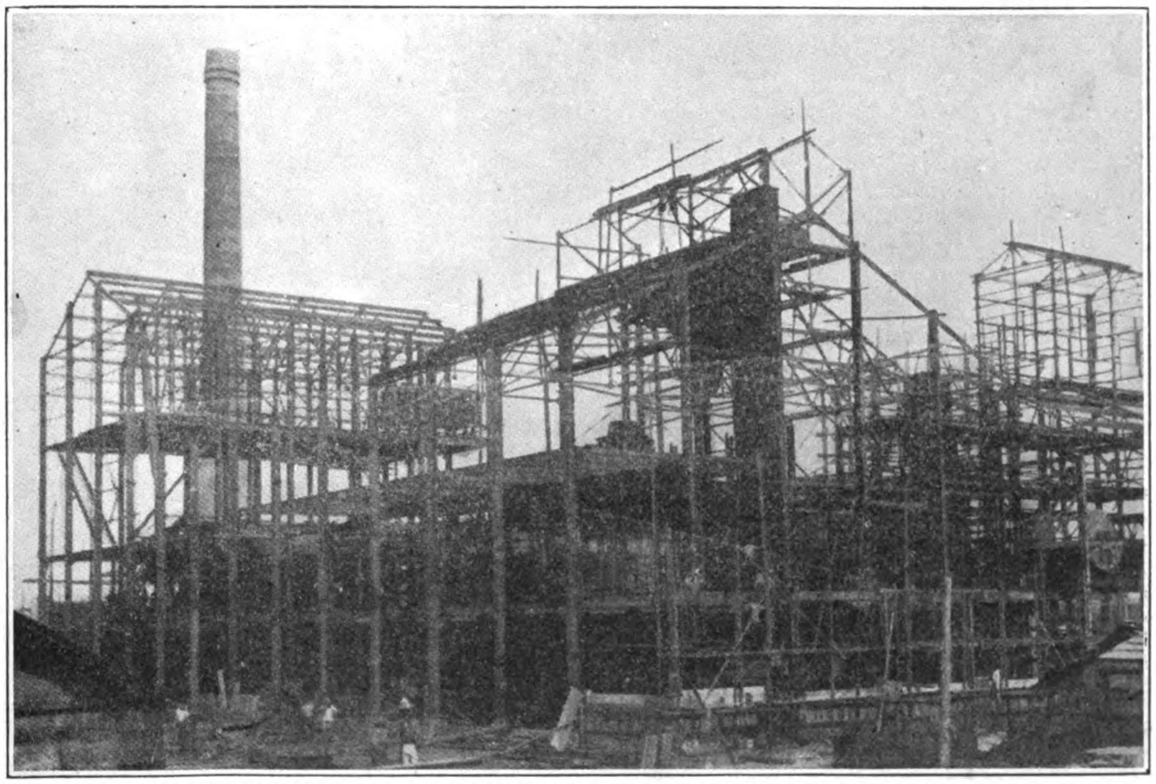
AT Obihiro, Tokachi Province, is located the new beet-sugar plant of the Hokkaido Seito Kaisha, which started operations in November. In the fields ten thousand acres of sugar beets await transportation to the mill whose capacity is six hundred tons of beets per day.

The climate of this part of Hokkaido greatly resembles that of Colorado and Wyoming, where beet growing has been very successful. In this locality it was found that the beets developed to a very large size, and contained a high percentage of sugar. In 1918 four hundred acres of beets were planted, resulting in a yield of fourteen tons per acre, averaging 15.9 per cent. sugar; and in 1919 the same number of acres were planted, which produced a yield of fifteen tons per acre testing 15.2 per cent. sugar.

In June, 1919, the Hokkaido Seito Kabushiki Kaisha was organized, under the presidency of Mr. Masakuma Matsukata, well-known sugar man in Japan, and the managing directorship of Mr. S. Makiyama, another well-known Japanese sugar expert. Men were despatched to the United States to study conditions of beet farming and beet-sugar making, and the most up-to-date machinery procurable was purchased and shipped to Japan. At the same time work was started in the vicinity of Obihiro preparing the fields for a beet crop the following summer, and ground was broken for the new plant at a point two miles southwest of Obihiro. This plant covers approximately one hundred acres of ground. It consists of one main factory building in which is housed most of the machinery, power plant, etc. In addition to this are a boiler house, lime kiln (steel construction), Steffens house in which takes place the final reduction of the molasses, the pulp drier, and a number of warehouses. The main building is four story, 181 by 69 feet. All buildings are of steel and reinforced concrete construction except the warehouses, which are brick and stone. A complete machine shop is also attached to the plant.

The entire plant was furnished by the Dyer Company of Cleveland, Ohio, through their agents, the American Trading Company.

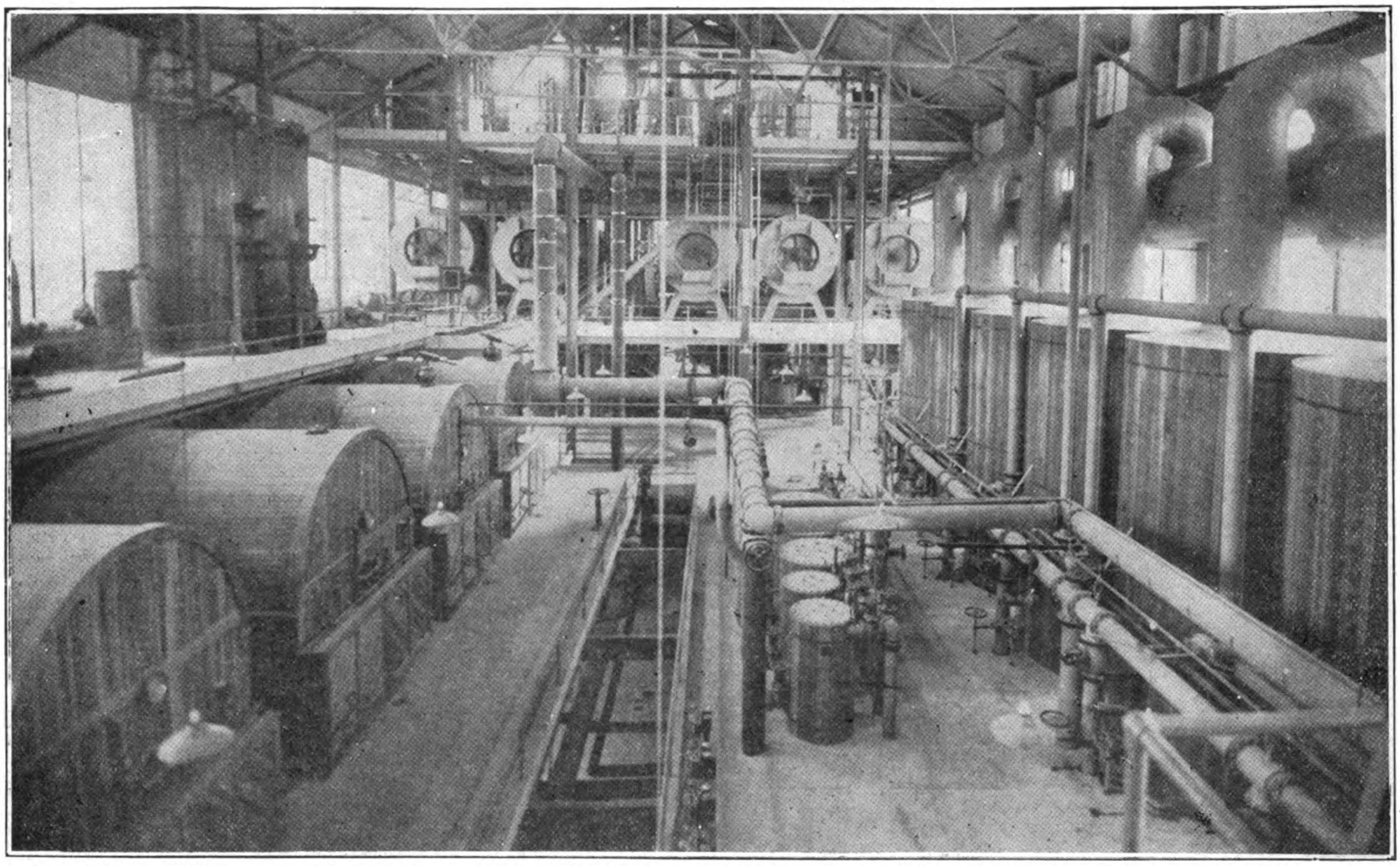
The company has built sufficient barrack-houses and residences to house all employees. Specially constructed houses have been erected for Korean employees. There is also a company store and company restaurant where



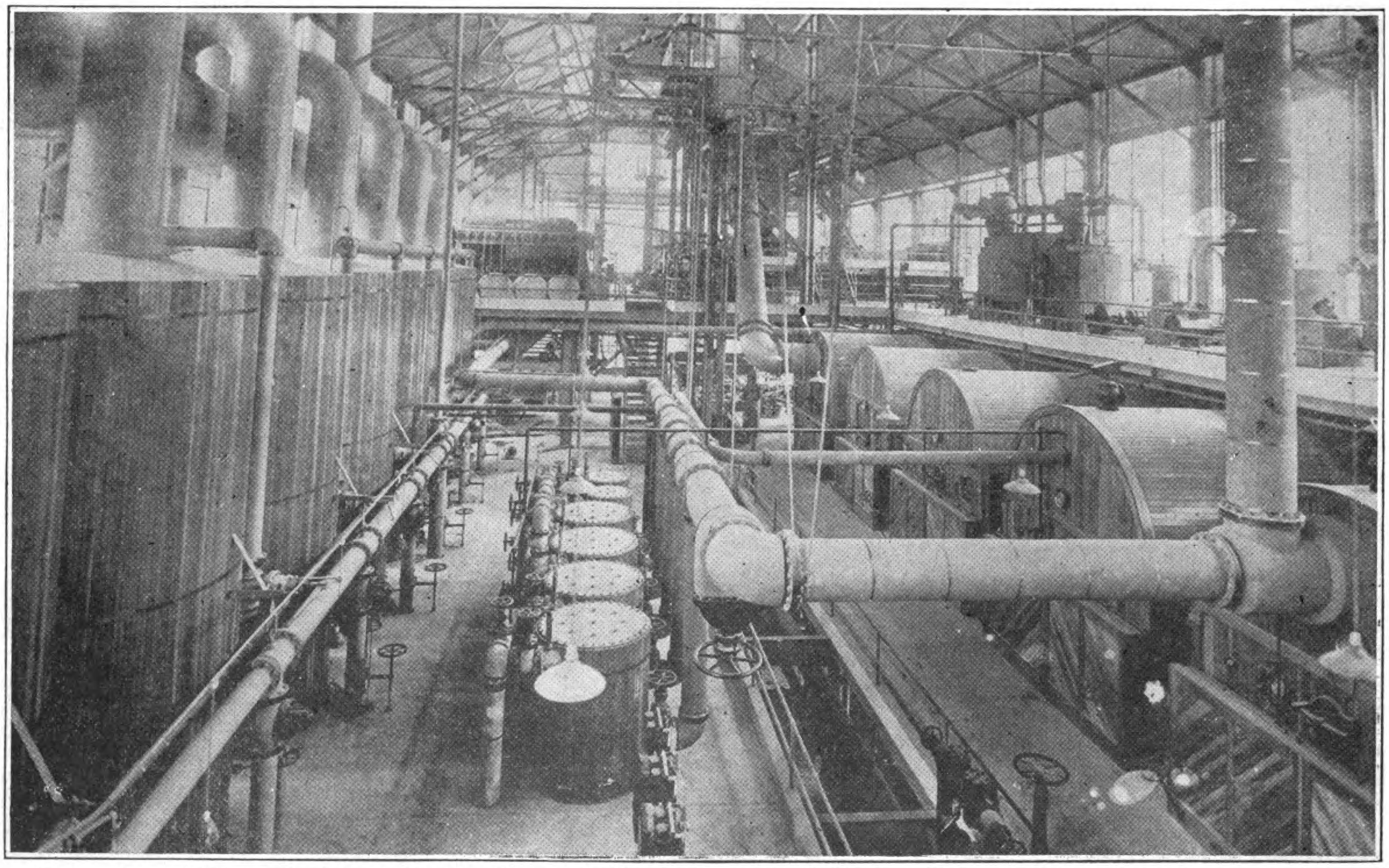
Another view of the New Beet Sugar Plant under erection at Obihiro, Tokachi Prefecture, Japan

AMERICAN BEET SUGAR FACTORIES IN JAPAN

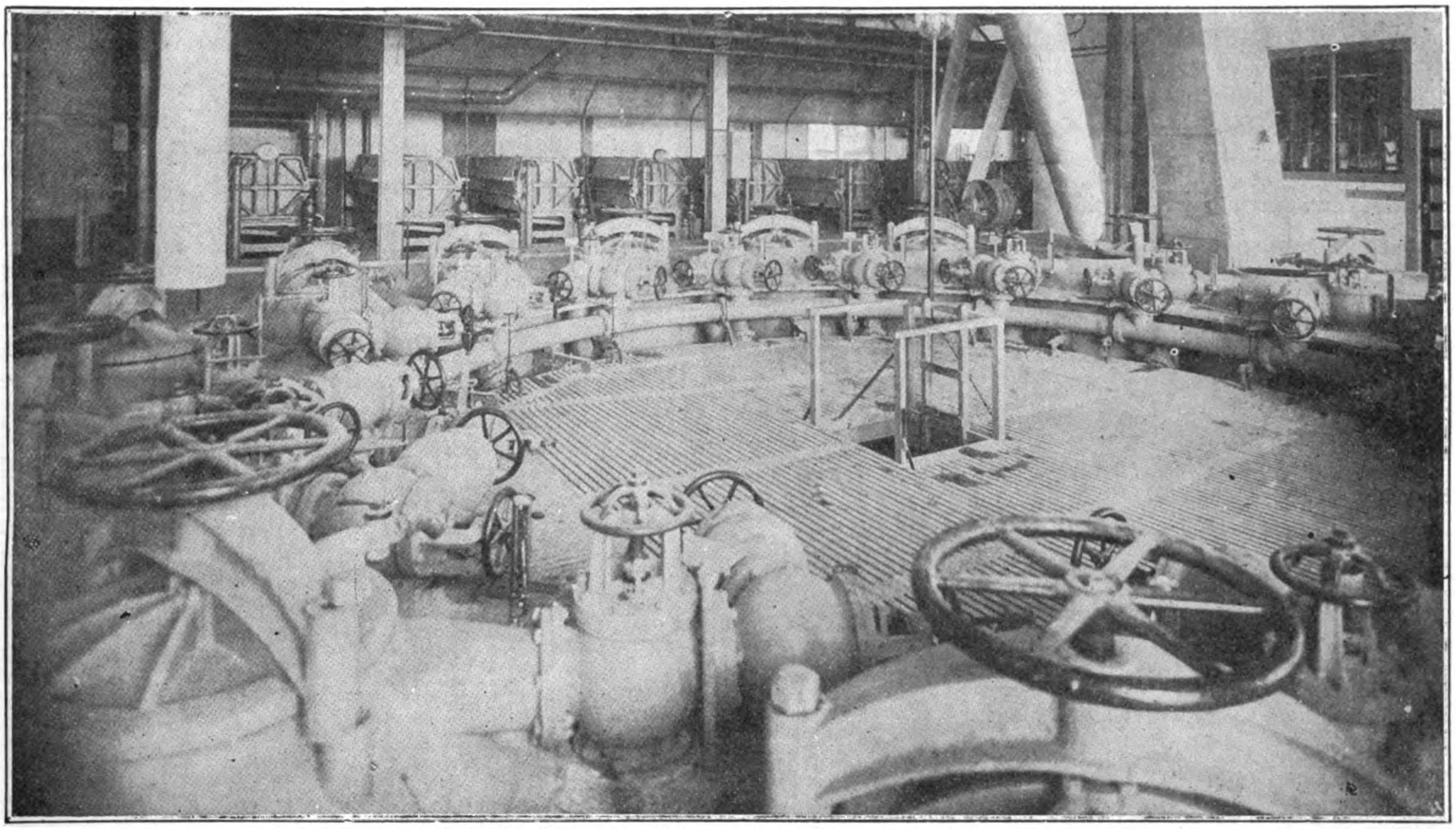
Interior of the Hokkaido Sugar Company's new 600-ton Plant at Obihiro in Hokkaido. A similar plant is being erected by the Japan Beet Sugar Company at Shimizu, Hokkaido



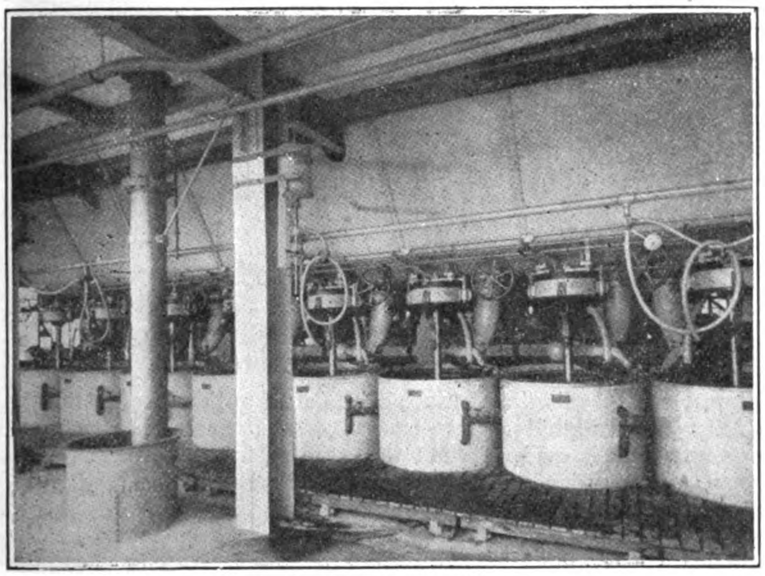
Carbonation and Evaporating Floor: Looking Toward the Sugar End of House. Horizontal Quintuple Vacuum Evaporators to the Left. Carbonating Battery to the Right. Vacuum Pan and Crystallizers to the Rear



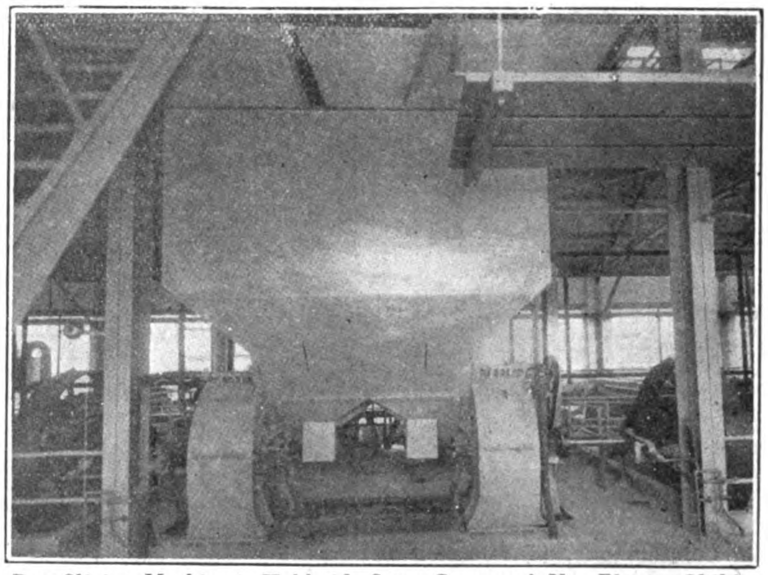
Carbonation and Evaporating Floor: Looking Toward the Beet End. Quintuple Effect on Right and Carbonating Battery to the Left



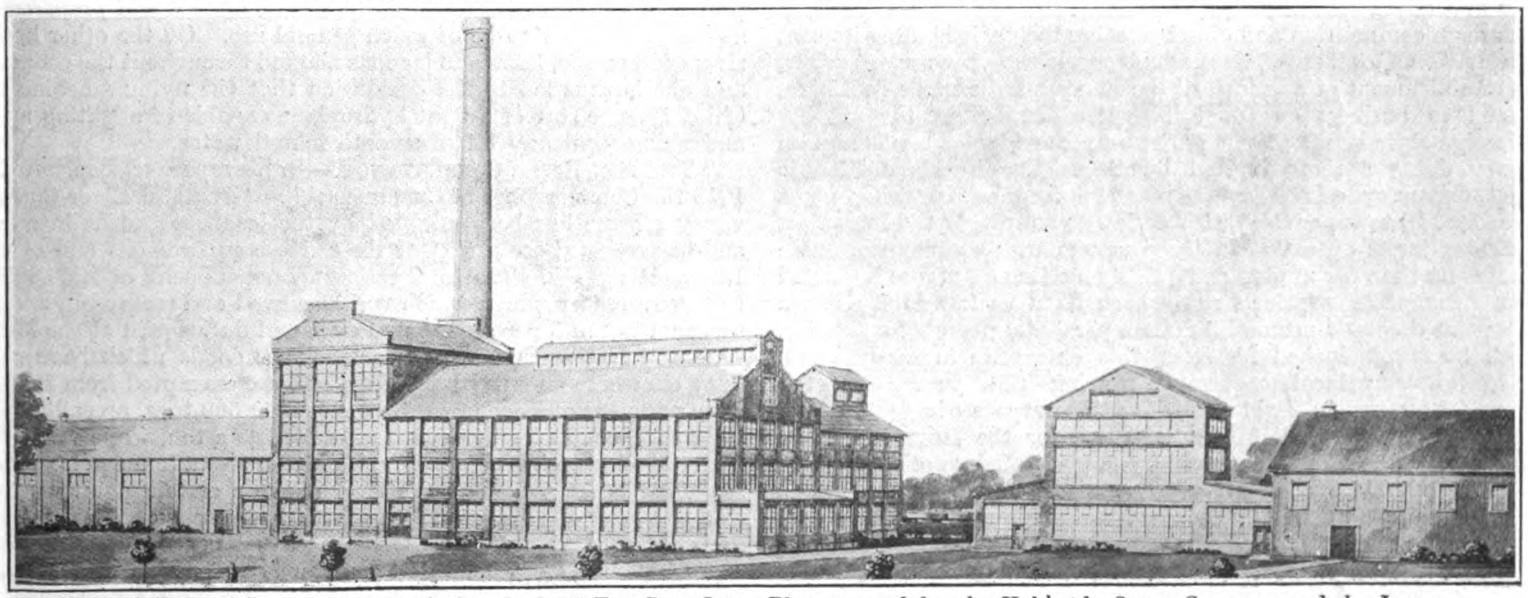
Fourteen Cell Diffusion Battery in Hokkaido Sugar Company's New Plant at Obihiro



Centrifugal Battery and Mixer



Beet Slicing Machine in Hokkaido Sugar Company's New Plant at Obihiro



General View of Dyer & Company's Standard 600-Ton Beet Sugar Plant erected for the Hokkaido Sugar Company and the Japan Beet Sugar Company by the American Trading Company

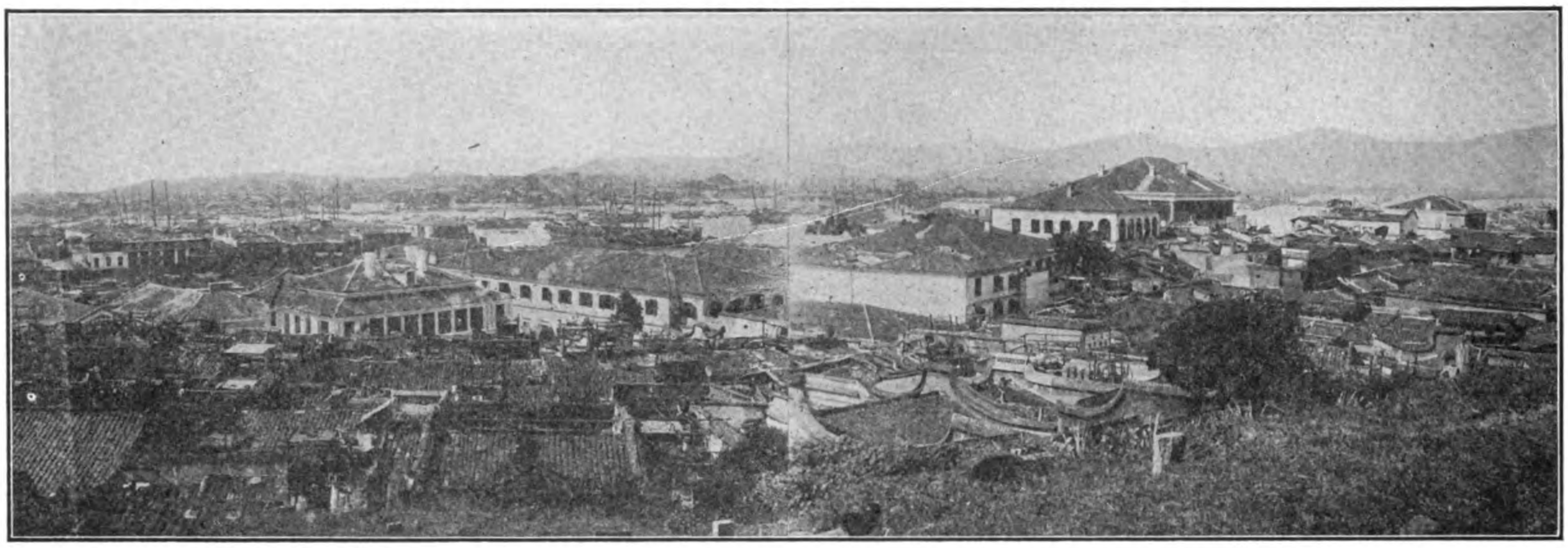
employees may buy commodities or meals. On the premises also is a fine club house, at which visitors or officials of the company are housed when visiting the plant.

Fifty-five miles of private railroad, narrow gauge, are being constructed, thus eliminating the long haul by wagon or cart to the mill. The rolling stock of the company consists of four small locomotives and two hundred and fifty beet cars.

Of the ten thousand acres planted this year, the company cultivated two thousand, five hundred acres, and private farmers the remaining seven thousand, five hundred acres. Officials of the company expect the total plantings next year will reach twenty thousand acres.

An exact duplicate of this mill is being constructed at the town of Shimidzu, a few miles from Obihiro. This plant will be ready for operation in the fall of 1921, and the officials of that company expect to have ten thousand acres of beet land under cultivation next year.

The Hokkaido Seito Kaisha in the clearing of the new land and its preparation for next year's crop, are using one 75 h.p. Caterpillar tractor and three 40 h.p. tractors of the same type. All the modern farm machinery to go with these tractors is being used.



THE CITY OF FOOCHOW

Foochow Port Development

Western Engineering Skill Training One of China's Wayward Rivers How to Behave

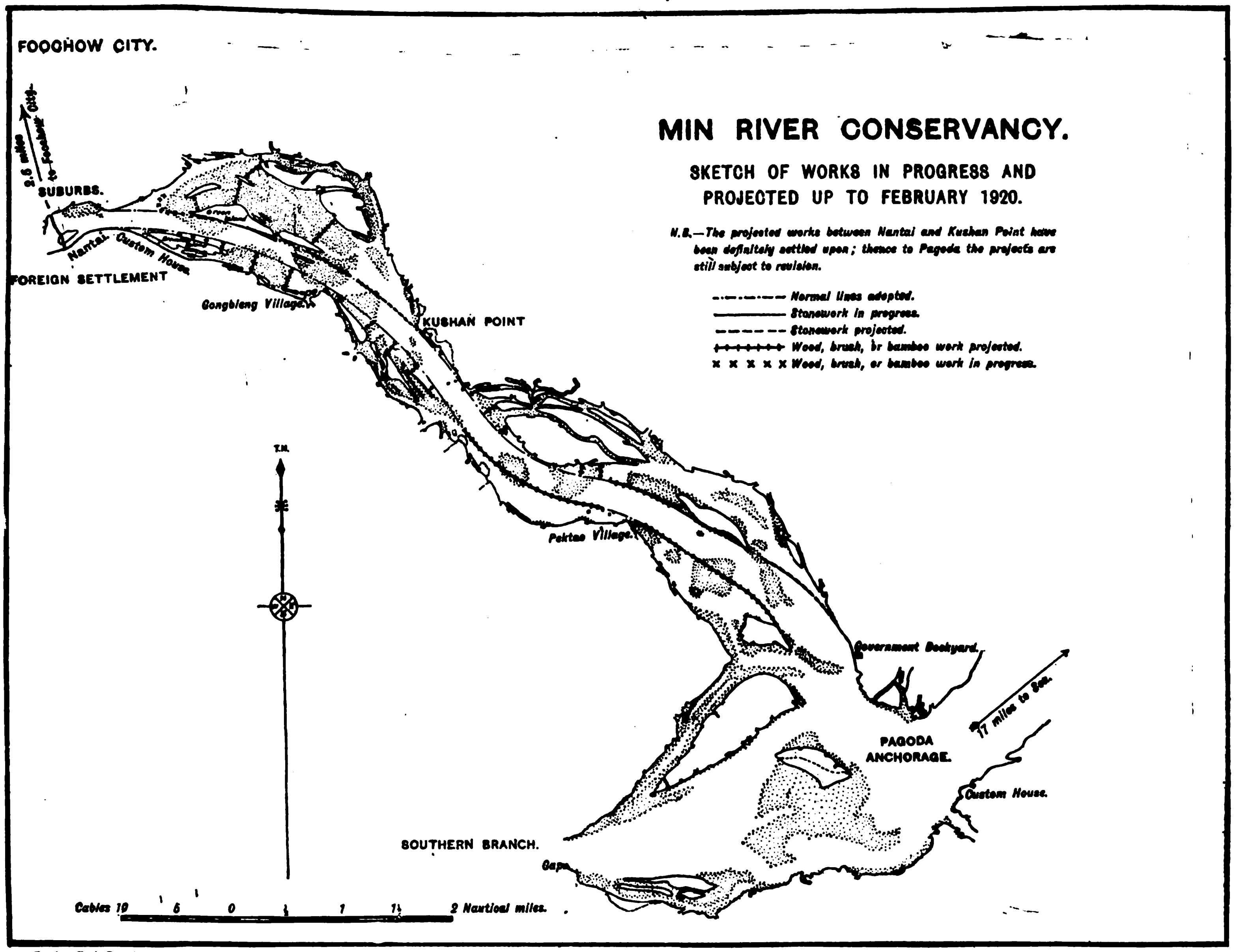
SUBSTANTIAL progress has been made in the important work of training the Min river so as to provide Foochow with a safe modern harbor. During 1919, this port made four new records—in the number of vessels entered and cleared, in the value of exports to other Chinese ports and in its exports of timber and of camphor.

Commissioner of Customs Thomas Ferguson, in his annual report just issued by the inspectorate of customs, says that "tea," once Foochow's "premier staple and now to all appearances doomed by foreign competition and discriminating tariffs, is holding its own bravely." Of local enterprises which mark the year under review, the establishment of a branch of the Banque Industrielle de Chine, opened to business on the 8th September, brings the number of foreign-style banks at this port up to four regular banks and an agency doing a more limited business. The Foochow Electric Light Company established a powerful ice-manufacturing plant (capacity, 10 tons per day) with a view to supplying the large fleet of fishing-junks operating in these waters with cleaner and more durable ice than the muddy and quickly melting substance imported from Ningpo. The price having been fixed as low as 2 cents a pound for domestic use and 3 dollars per 1,000 pounds for fish ice, much benefit is looked for from this enterprise in many ways. An interesting local occurrence during the year was the arrival of an Italian flight-officer for the purpose of selecting and preparing an intermediate landing-place for the Rome to Tokio flight. After considerable trouble, one place after another proving to be unsuitable even if given some weeks' preparatory work, a rather small site was finally obtained and made ready. The object lesson of this is the following : if at the capital of a province, situated in a wide alluvial plain, it is impossible, even with the sympathetic interest and promised assistance of the chief authorities, to prepare a fully suitable landing-place except at great expense in time and money, China is evidently not the country for the ordinary aeroplane. With every inch of level ground ploughed up and cultivated or marshy and soft, it would be a matter of grave doubt whether an aeroplane could make good an unexpected intermediate landing anywhere without sustaining serious damage. And in a country where ordinary roads are still non-existent it is not likely that properly prepared landing-sites will soon be found and prepared in sufficient numbers to be of much general use. On the other hand, rivers and canals, lakes and lagoons abound throughout the country, and one is thus led to the conclusion that the flying machine for China is some sort of a light hydroplane capable of alighting upon and rising from any bit of smooth inland water.

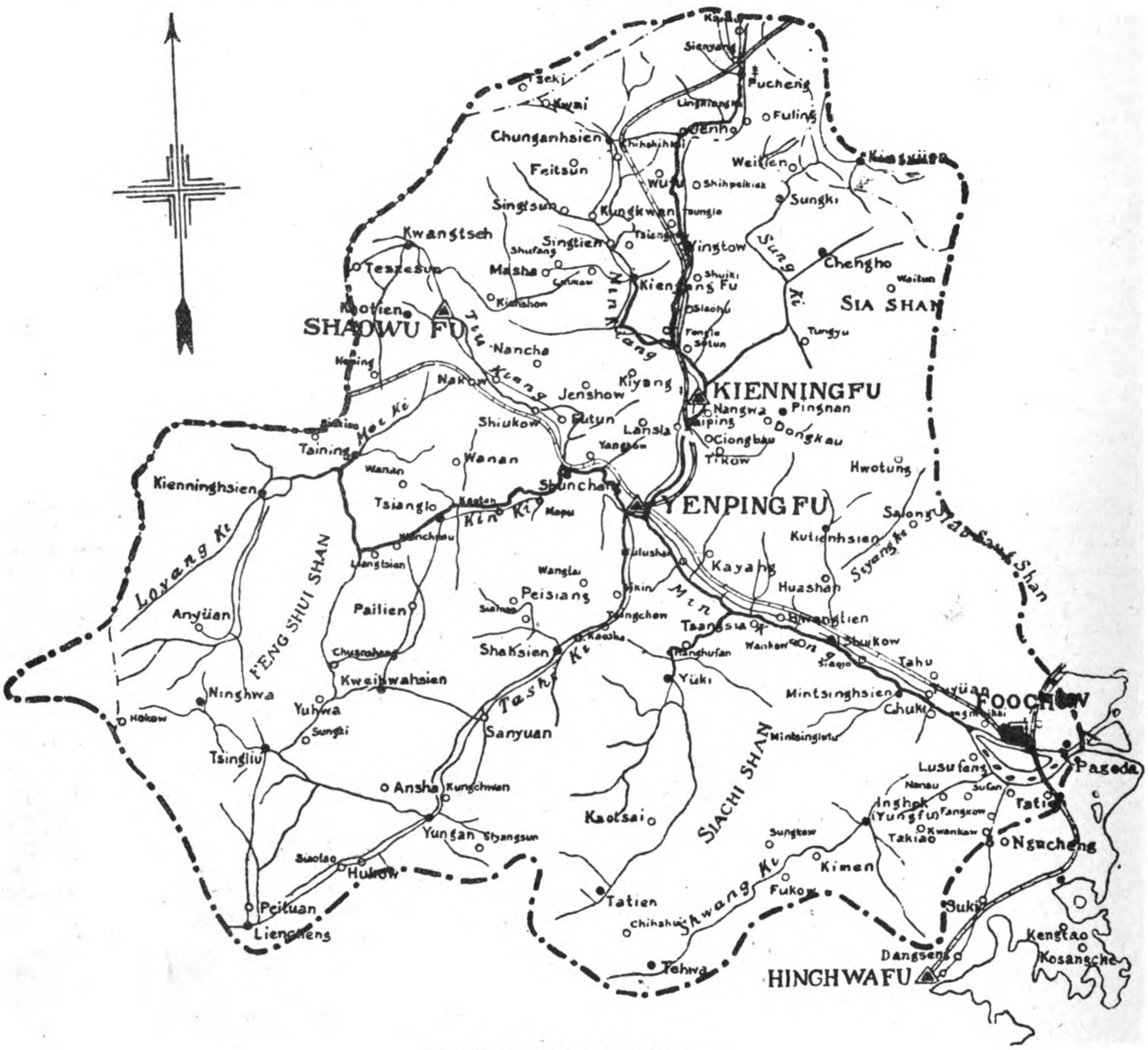
THE MIN RIVER CONSERVANCY.—In his report on Foochow for 1918 the Commissioner of Customs said : "The Min River Conservancy scheme has been adopted by the local mercantile interests and has received the assent of the Chinese government and of the Diplomatic Body. The total estimated expenditure of $900,000 is to be covered by a loan which will be served and secured by a conservancy tax of 5 per cent. on all dues and duties paid at the Maritime and Native Customs, which includes goods which have paid duty elsewhere on entry into China and are exempted from further duty payment at Foochow. Steamers over 500 tons, ascending the river to Foochow itself, pay a tax of 5 cents a ton, while vessels of under 500 tons pay 3 cents a ton. There is also a tonnage tax on all sea-going junks ascending the river above a certain point, as well as a fixed tax of $5 a month on passenger launches. A cargo-boat pays a tax of $1 a month ; treasure pays ½ per mille *ad valorem.* The Chinese Government Salt Bureau is to pay an annual con-

tribution, the amount of which, however, has not yet been fixed. The actual local government contribution is $18,000 a year. It is estimated that the annual income to be derived from taxes and contributions will not be less than $90,000. The work is to be completed within three years from commencement, although it is believed that actual results will be apparent considerably before this. The collection of the taxes and the financial transactions are vested in the Commissioner of Customs. The actual administration will be in the hands of a committee of three, a Chinese government representative, a representative of the local Consular Body, and the Commissioner of Customs. The object is to admit of coasting steamers of 16 to 17-ft. draft ascending the river right up to Foochow, thus avoiding the double transhipment at present necessary. The harbor space at Foochow is ample and can even be increased, if necessary, by an extension of the present limits. The construction of wharves will have to follow as a natural course as soon as visible results are attained, but in this the shipping companies will have to study their own convenience. The proper lighting of the river will have to be undertaken as the work proceeds. In one respect, at least, Foochow can claim to be ahead of other ports and to be congratulated : the scheme only took six months after its adoption locally to pass through the customary diplomatic channels and receive official sanction. The usual length of time, judged by other places that have undertaken conservancy work, may be measured by years."

Commissioner Ferguson, in his present report, says that "it is now gratifying to be able to chronicle an unremitted progress in this scheme during the year under review. The taxation system was put into force on the 3rd March, 1919 and a few months afterwards an engineer engaged to take charge of the execution of the work. After another thorough survey of the river and a great amount of unavoidable preliminary work in the way of organization, equipment, finding suitable materials, etc., appreciable stretches of training and shore protection works are already in evidence. It is the intention to bring about the decided improvement in depth by means of a training system only—*i.e.*, without dredging,—which will narrow down, regularise, and confine the flow of the river, both in the discharge of its up-country drainage and in its accommodation of the flood and ebb currents induced by the sea, between normal lines, stabilised where necessary by means of works such as leading dikes, shore protection, groynes or spur-dikes, closing dikes, etc. On the accompanying sketch-map will be seen where these works are projected and how far they have progressed up to date. Two important features which may be noticed at the present stage are, in the first place, the fact that to all appearances so far the river bed will allow of stone works to be built up without foundations of brushwood, except, perhaps, in a few of the worst places, which will very favorably affect the speed and cost of construction, and, secondly, the existence of, and consequently some facilities in the procuring of material and skilled labor for, a local system of river training works in the shape of 'planted bamboo,' *i.e.*, bamboo poles from $1\frac{1}{2}$ inches diameter down are struck into the river bed at a distance of 6 to 8 inches so as to form long screens of a width of about 10 feet. This is what in hydraulic terms would be called a 'permeable dike,' but of such an extraordinary degree of attenuation as would probably never be ventured upon by a foreign engineer without this native example and the ocular proofs of its efficacy. As an offset to the two favor-



Foochow Trade Report, 1919.



WATERSHED OF THE MIN RIVER

Foochow, the capital of Fukien Province, lies on the Min River, 34 miles from the sea, in lat. 26 deg. 20 min. 24 sec. N. and long. 119 deg. 20 min. E., about midway between Shanghai and Hongkong. Foochow is nearly opposite Tamsui, in Formosa, with an arm of the sea between. The foreign settlement is on the opposite side of the river from the native city. Between the native city and the foreign settlement is a small island in the stream which serves as a base for an ancient stone bridge, which connects the settlements.

able features given above might be mentioned a great difficulty in procuring the necessary materials in sufficient quantities and speed of delivery to keep the work going with a fair degree of intensity. Labor seems easy to procure, but, again, our local contractors are apt to be apathetic and unenterprising where jobs are involved of sizes to which they are not accustomed. For most of the work lends itself to execution by sectional contract for material, labor, or both combined, and so far there seems to be very little need to resort to importation of either from elsewhere. On the whole, however, there is every reason to look forward to a steady and effective progress of the scheme and consequent accomplishment of the aim in view, viz., the elimination of lighterage at Pagoda Anchorage for all cargo that can be brought into the port in steamers drawing up to 17 feet. It should be borne in mind that the above scheme only takes account of the navigational approaches of the port. An incidental benefit will be the reclamation of great tracts of sandbanks and their ultimate recovery for cultivation, all within the radius of the present scheme. Should the Conservancy later on wish to turn its attention farther afield and, with the advantages of its established organization, technical experience gained, prestige, etc., take in hand some of the higher and back reaches of the river for the benefit of the husbandman, a vast potential field of the most valuable activity in the way of reclaiming and protecting land for cultivation lies ahead of it."

Population of Japan 77 Millions

Tokio, Dec. 19.—The population of the Japanese Empire, according to the final figures given by the census board, is 77,005,510, made up as follows: Japan proper, 55,961,140; Korea, 17,284,207; Formosa, 3,654,398; and Saghalien, 105,765. In Japan proper the population comprises 28,042,995 males and 27,918,145 females, giving a density of 2,239 to the square li. There are 16 cities with a population of over 100,000 each.—Reuter

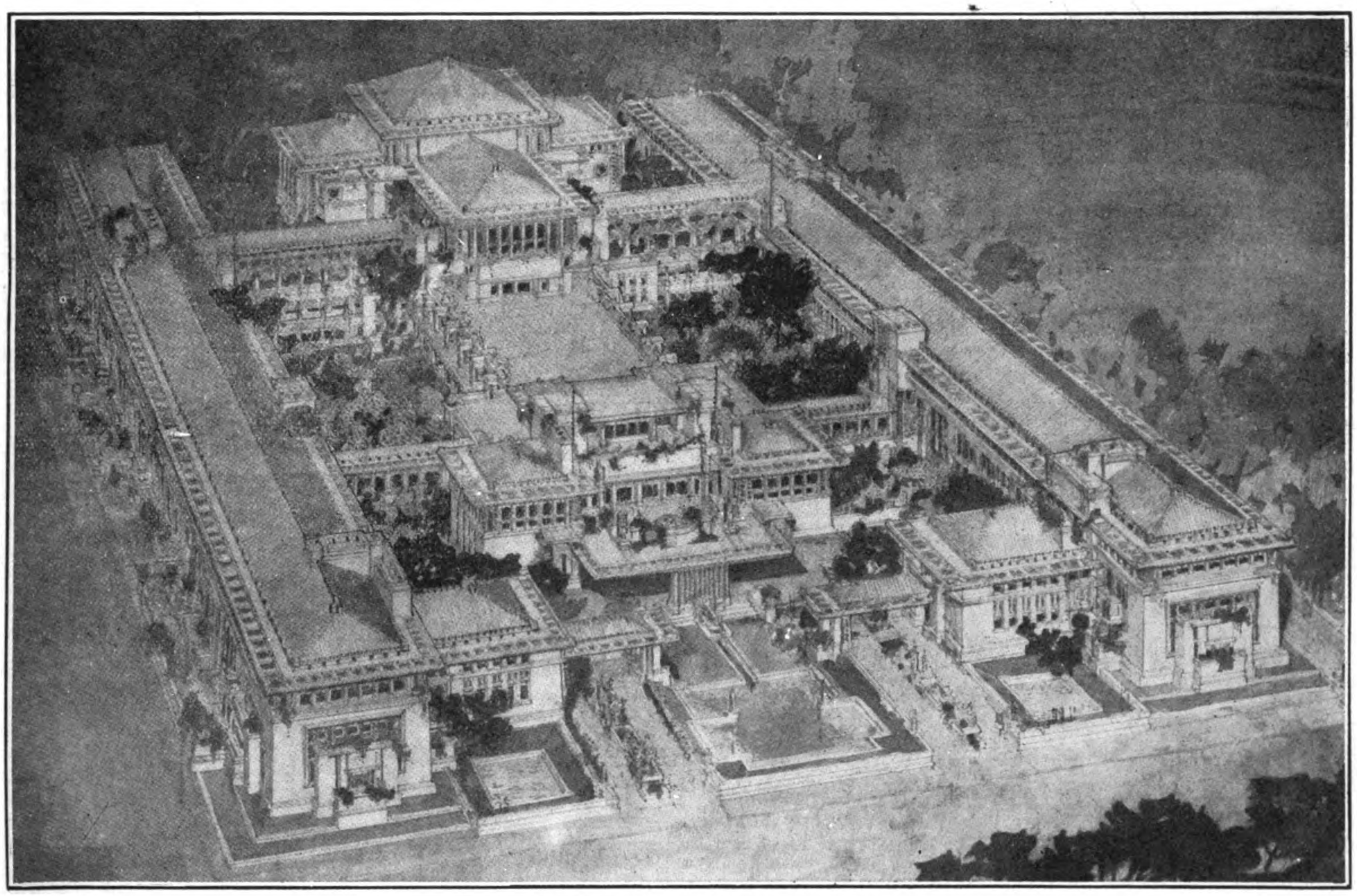
"The World's Finest Hotel"

Tokyo's Magnificent New Structure Designed by an American to Typify the New Spirit in World Architecture

ANOTHER instance of Japanese-American co-operation is seen in the designing and construction of the new Imperial Hotel in Tokyo. It is characterized by Mr. Frank Lloyd Wright of Chicago, the architect, as the "finest hotel in the world in point of character—a complete fireproof organic structure embodying the best and most advanced thought of the time in all its features." The design of the new hotel is a complete departure from all other accepted plans and a welcome variation from the medley of non-descript foreign structures hitherto erected in Japan from the plans of architects reflecting the obsolete styles of their various countries or schools. The new Imperial is designed to carry out the note of simplicity and sincerity in order to help teach Japan a new lesson in Western civilization in aspects that are considered vital.

The general view of the new building will help to convey some idea of this remarkable new structure, whose predominating feature is seen in the theatre and huge banqueting hall in the rear. The building will contain 300 guest rooms, each with a bath. The main building will hold a banquet hall of great beauty, capable of seating at table 1,000 persons, a grand dining room opening out to interior court gardens on two sides, private dining rooms of all sizes, a theatre, or cabaret with revolving stage, roof garden, etc., while a side entrance from the street which the present hotel building faces, will lead to a supplementary section containing exhibition galleries, club rooms, billiard rooms, a lounge for men and one for women and various other features, which will furnish an elaborate and extremely comfortable rallying point for the social activities of Japan's capital. Other features will be open air arbors where one may dine in private when the weather makes this desirable. A fine Turkish and Russian bath, with a 20 x 60 feet swimming tank, is included.

The interiors will be carried out in permanent materials, such as brick, bronze and marble, in a style characterized by breadth, strength and simplicity, all utilitarian needs being met directly, in appropriate form and with appropriate materials, without over-ornamentation.



"THE WORLD'S FINEST HOTEL."

Heating, lighting, water system, furnishings, etc., will all be incorporated in the building itself. Heating, lighting and cooking will be done by means of electricity, the equipment being designed to handle 2,000 guests at one time. Although the hotel is designed by an American, all materials, with the exception of probably hardware and mechanical appliances, will be made in Japan. The edifice will be of yellow pressed brick trimmed with a special cream colored lime spotted stone.

An important part of the hotel is the boiler room and laundry. Twenty feet under the new building is a cistern from which will

come the water for the laundry. A system of pools will catch the rain water which falls in the hotel property and this water will be drained to the cistern. This water will be filtered and used throughout the hotel for bath purposes. Near by is located an Artesian well and over it is a big pressure tank which holds 30,000 gallons of water. Under the main dining room, between the Hibiya Park entrance and the entrance on the east, will be the swimming pool.

South of the laundry and boiler room is the septic tank where the sewage of the hotel will be carried, there to be chemically treated before drained into the canals of the city.

Mr. Hayashi, the manager, has planned a group of cottages which will be constructed in semi-studio architecture to be leased to the foreign residents of Tokyo. They are to be built on the two sides of the Japanese gardens which are to be one of the beauties of the new establishment.

The main entrance of the hotel will be on the Hibiya Park side and from the main entrance to the cabaret dining room will be a good sized lobby. Near the dining room at the east end will be the promenade and over the main dining room in the centre of the building will be a roof garden where tea will be served during many of the months of the year. Beautiful landscape gardens are being planned.

The Mint of the Philippine Islands

THE new mint of the Philippines was officially opened for coinage on July 16, 1920. The first piece of metal that was struck from the dies at the opening of the new mint was this souvenir medal, made of gold, silver and bronze, to commemorate the occasion. On the obverse side of the medal is a profile portrait of President Wilson, and on the reverse side a figure represents Liberty protecting and instructing the new beginners in the operation of coining machinery, at the same time holding in her right hand the weighing scale to demonstrate the absolute necessity for carefulness and exactness in every operation which all mint work demands. This medal was designed by Clifford Hewitt, technical mint expert, who has installed and instructed the *personnel* in the operation of a mint.

The mint is sufficiently large to take care of the Philippine coinage of bronze, nickel and silver, and has an annual capacity of 25,000,000 coins, or a possible daily output of 85,000 pieces, figured on a basis of eight working hours per day. The appliances of the mint are of the very latest design, and the most modern methods of operation have been adopted. All the machinery is electrically driven, each machine having its own individual electric motor of the alternating type. The largest motor is 50 H.P. of a total of 175 H.P. This installation consists of 20 motors in all.

P. I. MINT COMMEMORATION MEDAL

One of the first installations required in a mint is an assay department, for the purpose of assaying all bullion received as deposits; to determine the fineness in order to make accurate payment to depositors of metal, also the same assaying of all ingots for coinage purposes, to insure that the legal fineness is always maintained in the coins.

This assay department is equipped with the latest design gas-fired cupel muffel furnace, one large oil-melting furnace, cupel forming machine, bottle agitator, assayer's fine balance, one 3,000 oz. bullion balance, acid laboratory equipment, including all glass jars, bottles and testing devices.

There is another very important department in connection with a mint. Electrolitic refinery is a process of refining precious metals which consists of positive and negative electric currents flowing from the annode to the cathode, which are suspended in a procelain tank containing the solution. This process of refining is the most modern and economic method of refining precious metals.

The installation consists of one electric motor generator set with switchboard and special wiring of 500 amperes at 5 volts, one oil-melting furnace, annode and cathode moulds, soapstone tube laboratory testing outfits, one 3,000 oz. balance and accessories.

The assay and electrolitic refinery departments in conjunction with the mint will be very much appreciated by the banks, jewelry trade and mining interests. It will also have a wonderful effect on stimulating mining of gold and silver throughout the islands, as the mine owners will be able to get correct assays of all samples of ore. All gold that is refined there in the islands is done at present with what is known as the cyanide process of refining and the gold refined by the method is of a low fineness, but by the improved method of electrolitic refining it is possible to refine gold and silver to a fineness of 999.9 plus.

The melting department of the mint consists of 5 oil-melting furnaces, one ingot topping machine, filing benches, ingot moulds, cooling tanks, stamping tables, pouring cups, stirrens, tonge and minor equipment. The output of each melting furnace figured on an eight hours a day basis on silver melting would be 2,040 pounds of metal melted per furnace, consumption of fuel oil 64 gallons or about 12 gallons of oil for every hundred pounds of metal melted. A No. 70 graphite crucible, holding approximately 412 pounds of metal, is melted in the furnace. A specially designed settling chamber for melting furnaces has been built which recedes silver-melting losses to $\frac{3}{4}$ of an oz. on every 1,000 oz. melted. The greatest losses or wastage in a mint are eliminated to a great extent by careful supervision and a modern melting equipment.

The rolling and cutting department of this mint consists of 2 50 H.P., electrically-driven rolling mills of the most modern type, fitted with hardened steel rolls. They are equipped with a patented roll adjustment, whereby the rolls can be adjusted to one ten thousanths of an inch. By this accurate adjustment of the rolls there is no difficulty in rolling a perfectly uniform strip of silver that when planchets are cut from this strip, they will be within the legal tolerance of weight. This system of accurate rolling eliminates a great amount of light condemned pieces. The cutting presses where the planchets are punched out of the strip, are also automatic. The press will cut four one centavo coins at one stroke. The speed of this press is 175 R.P.M.

The planchets annealing and cleaning department consists of an automatic rotary annealing furnace, gas or fuel oil. All the coin blanks are run through this furnace to be annealed at a temperature of 1,400 degrees farenheit, as continual rolling hardens metal and the annealing restores the original softness to the coin blank. In the process of annealing the coin blanks become oxidized or tarnished. This oxidization is removed by rumbling and burnishing the blanks in a special rotary washing machine, in water and compound. By this operation, it restores the original lustre to the metal. The blanks are then put into a centrifugal coin dyer, which has a hot air attachment and revolves at a speed of 1,000 revolutions per minute, and which extracts all moisture. The coin blanks are now perfectly dry, and will not tarnish.

The press, or coining department is equipped with two of the latest and most modern coining presses. They have a speed of 90 pieces per minute and will coin from a ten centavo to a silver dollar of $1\frac{1}{2}$-in. diameter at a pressure of 180 tons. These presses require no operators, they are entirely automatic and all that is

THE MINT BUILDING, MANILA, P.I., WHERE PHILIPPINE CURRENCY IS COINED.

The upper portion of this building was seriously damaged by fire, recently. Fortunately, the fire was controlled and extinguished without injury to the mint plant described in this article.

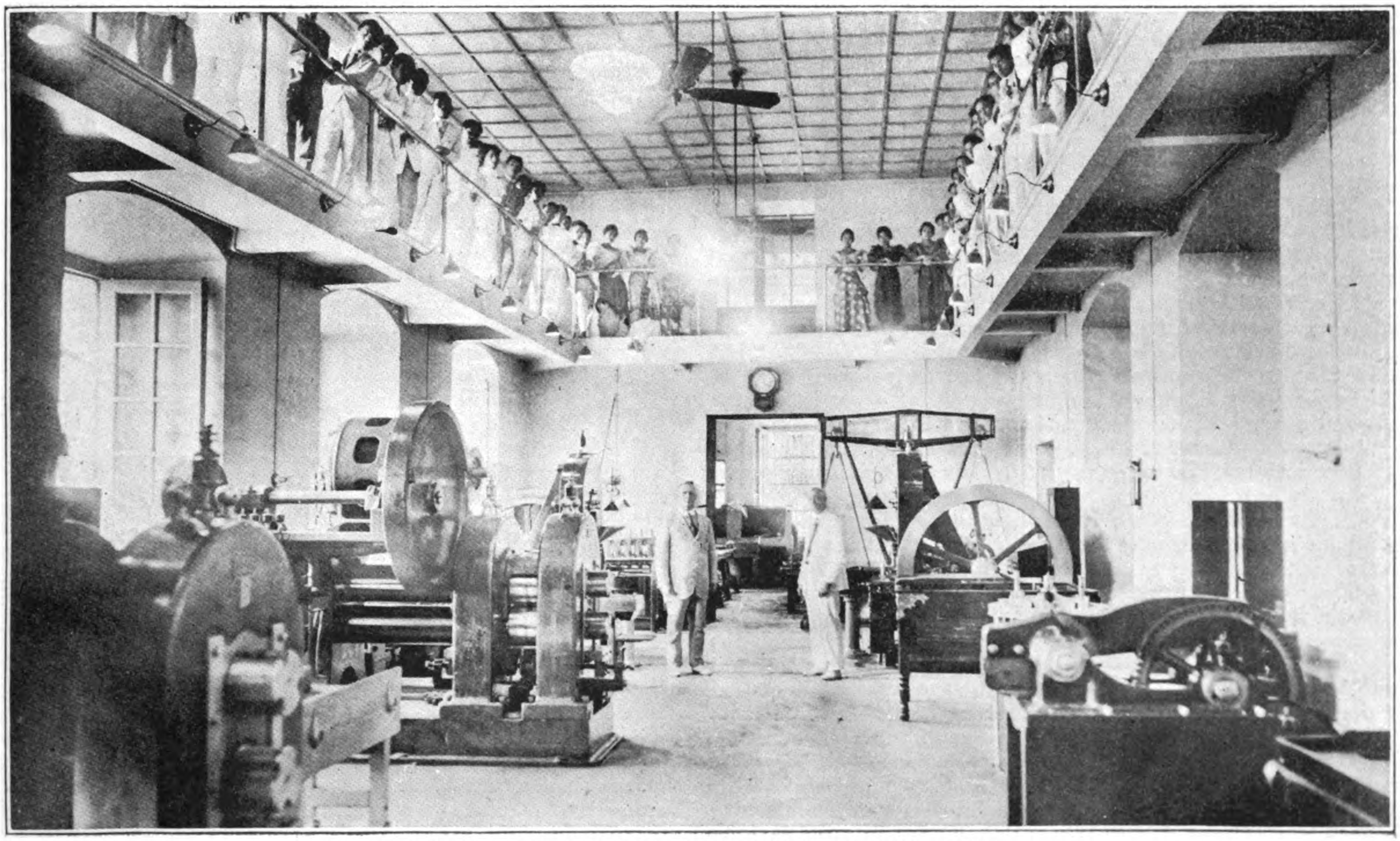
necessary to do is to start them and through an electrical automatic device, the press will stop automatically when the last coin is struck by the die. These coining presses are equipped with automatic coin feeding devices. All that is necessary is to fill the hopper mounted on the front of the press and the finished coin drops out of the side of the press into a box.

The last operation that all coins pass through is the counting department, for every individual coin is counted on what is known as the counting board, which counts 500 coins at one time. Coins are put in bags at the same time they are counted. Each bag is sealed with a lead seal with the counters name on each bag.

A complete mechanical department has also been installed.

The Philippine Islands can say that they have the most up-to-date and complete mint in the Orient, in the way of the latest designed machinery and improved methods of operation.

A great deal of credit is due Mr. Hewitt, the technical mint expert, who built this complete mint equipment under his personal supervision at the mint at Philadelphia, U.S.A, shipped it over there, made the necessary changes to the building, installed the machinery ready for operating, in less than eighteen months from the time he received the official order from the Philippine government. Mr. Hewitt is now supervising the plans for the new Chinese government mint at Shanghai.



ROLLING AND PRESSING MACHINERY, MANILA MINT

Huge Road-Building Program for Japan

WITH only 10,000 automobiles in the empire, the Japanese Diet has appropriated $125,000,000 or at the rate of $12,500 per automobile, as state aid during the next ten years for good roads. The comparatively small number of cars in use is 40 per cent. more than were in Japan a year ago, and insistence on good roads has increased in the same proportion. Good highways are needed for many things besides automobile touring, though they are more of an essential for the automobile than for any other conveyance. Of the 72,000 miles of highways on the islands, perfectly satisfactory for pedestrians, small carts, and rickshaws, few outside of the largest cities can be used for motor travelling, writes Junius B. Wood, correspondent of the *Chicago Daily News*. Two reasons for this are that the narrow, thinly surfaced sand roads are entirely sufficient for the mode of locomotion to which the country was accustomed for generations and that when the excellent system of railroads was laid out, existing highways, grades, and bridges were used for it wherever convenient.

From Tokyo to Kobe is a 378-mile railroad ride of less than 14 hours. The old Eastern Sea Road (Tokkaido) stretches between the two cities. Recently the good roads boosters under the auspices of the Roads Improvement association made a demonstration trip in six automobiles over this road. It required five days. At five different places the railroad is using the only substantial bridges. Pedestrians and carts must either ford or cross on structures which will not hold the weight of a car. It was necessary to load the automobiles on trains to make the crossings. The prefectural government has now set aside $4,000,000 for the improvement of roads and bridge construction through the Hakone district. Highway bridges are to be built across the mouth of Lake Hamana 18,000 feet long, and over the Fuji-kawa 3,500 feet, the Oi-kawa, 4,200 feet and the Tenryu-gawa about 6,000 feet. It will take several years before the automobile highway through this wonderfully picturesque and historical section is completed.

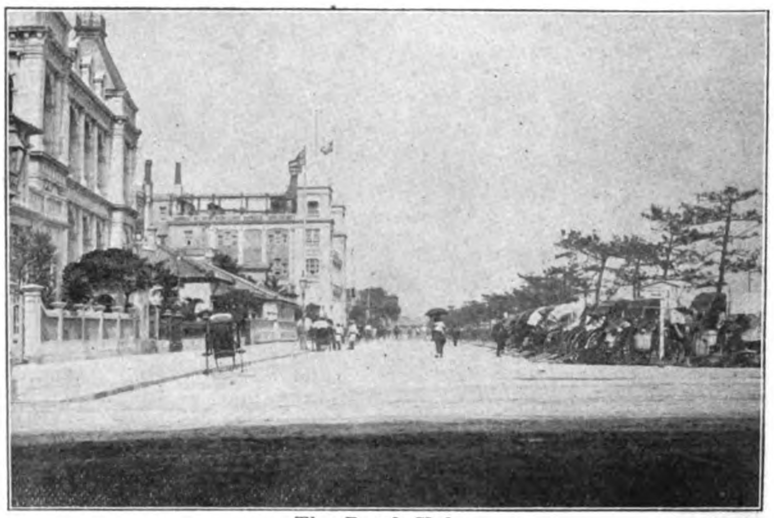
Work is going ahead on several shorter stretches connecting cities. For the 20 miles connecting Kobe and Osaka, $7,000,000 has been set aside and the work is to be completed in five years. The eighteen miles between Tokyo and Yokohama is to be finished in three years at a cost of $7,500,000. Next will follow the road between Osaka and Kyoto at a cost of $2,500,000, connecting with the main Tokkaido Highway. From Tokyo north to Nikko is 97 miles and includes the erection of a 5,600 feet bridge over the Tone-gawa at a cost of $30,000. It should be finished next year and automobiles can then make the run from Yokohama, through Tokyo to Nikko and its temples in three hours.

Military needs have been another strong incentive to good roads. The 21 miles of road between Yokohama and the naval station at Yokosuka, skirting the sea is delightful. This road reaches Kamakura, 14 miles from Yokohama, the old Shogunate capital of the 12th century with its collossal Daibutsu and hoary temples. The state has offered the prefecture $10,000,000 to improve the other two roads between Yokohama and Kamakura but so far the latter has not come forward with an equal amount.

In Korea and Hokkaido, millions are being expended by the Imperial government for road construction which the local governments must maintain. In four years $50,000,000 will have been spent for road building in Korea alone. Much of this new highway can already be seen parelling the railroad from Antung on the north for 590 miles to Fusan on the southern tip of the Korean peninsula. In all about 16,000 miles of highway are being built or modernized in Korea.

The construction costs are defrayed by the state paying one-half and the prefectural, county, municipal and township government paying the other half. An automobile owner pays in the Tokyo district an annual tax of $59 to the prefecture and $75 to the municipality and is therefore entitled to some consideration in the way of roads. A bill is before the Diet to have the state collect all the automobile taxes and use them for road building.

Dr. R. Midzuno, administrative superintendent for Korea, is president of the Roads Improvement Association. Some of the others active in the movement are, Takejiro Tokonami, minister of Home Affairs : Baron Y. Shibusawa : Dr. Isozi Ishigura and Kakichi Uchida, members of the House of Peers : Baron Renpei Kondo president of the Nippon Yusen Kaisha : Mitsugi Holta, chief of the Government Civil Engineering Board and Dr. T. Kondo, government engineer. Mr. N. Sagami, chief of the roads section of the Home Affairs department, recently started on a tour of America and Europe to study road administration and methods of construction.



The Bund, Kobe

Although much of the road construction is being carried out by manual labor, as the work progresses the prospect seems bright for developing a big market for road making and concrete machinery.

Japanese Trust Companies

THERE are over 1,000 trust companies operating in Japan with a total capital of Yen 180,000,000, of which Yen 30,000,000 is paid-up. A large proportion of these concerns are in reality brokers in bills and securities. Only about ten do a real trust business, there being no trust law in force. The following list shows the names of the principal companies operating in Japan :—

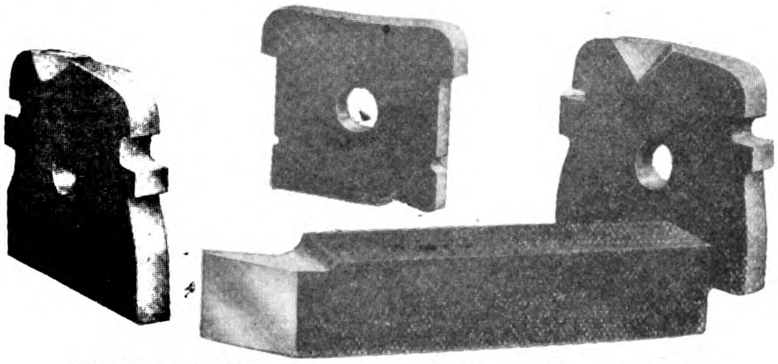
Name	Capital	Paid-up	Location
Japan-American Trust Company	50,000,000	12,500,000	Tokyo
Nitto Guaranty Trust	2,000,000	500,000	,,
Nissho Trust	2,000,000	500,000	,,
Tokyo Trust	5,000,000	2,375,000	,,
Takasago Trust	1,000,000	250,000	,,
Imperial Securities Trust ...	3,000,000	1,500,000	,,
Kobe Trust	3,000,000	1,500,000	Kobe
Kyoto Trust	500,000	500,000	Kyoto
Commercial and Industrial Trust	500,000	125,000	Yokohama
Aichi Trust	500,000	500,000	Nagoya
Saisei Trust	2,000,000	875,000	Kobe
Domestic and Foreign Trust...	6,000,000	2,650,000	Osaka
Nagasaki Industrial Trust ...	500,000	200,000	Nagasaki
Fuji Trust	1,000,000	250,000	Tokyo
Tokyo Industrial Trust	5,000,000	1,350,000	,,
Oda Trust...	3,000,000	2,400,000	,,
Yamadaya Trust	500,000	135,000	Asahigawa
Hiroshima Trust	2,000,000	500,000	Hiroshima

Some of the larger of the above companies act as agents for industrial funds and securities and some go so far as to guarantee dividends in new companies. The draft of a new Trust Law now under consideration by a special committee, restricts the minimum capital of trust companies to Yen 1,000,000, of which one-half must be paid-up. The purpose of the law is to eliminate the nominal concerns, and prohibit the others from conducting a banking business. If passed, it will undoubtedly affect some of the larger trust companies in operation.

The Truth About High Speed Steel

By T. Sullers

PERHAPS the real importance to mankind of modern technical materials can only be appreciated by an observer old enough to remember the conditions which obtained when people had to put up with the best that former discoveries could yield. It is not merely the engineer who profits when work is facilitated and speeded up, or the number of spoiled parts and broken tools reduced. The public is the ultimate and the largest beneficiary. Slow work, high labor-cost, and provision for rejections all have to be paid for. Recent events have brought home, even to those least versed in economics, the national importance of big production. Unless we can improve foreign exchange by exporting great quantities of goods at competitive prices, food and clothes will never be any cheaper, and the interest on the war-debt will keep all of us for ever poor. High production and prices low enough to meet foreign competition demand speed in the workshop. It is likely that nothing else contributes in anything like the same degree to this as High Speed Steel.



Specimens of High Speed Spade Cutters and Turning Tools

Thus the interesting booklet* on this subject which has been published is peculiarly opportune at this time. More nearly than anything else which the present writer can recall, it enables one to appreciate, as an older observer of workshop conditions might understand them, the enormous service to tool-making (and thus to the whole public) of the men who perfected High Speed Steel.

Steel and Speed

When the quality of red-hardness had not yet been achieved, work was necessarily slow. A lathe could not be run, or the material fed, above certain rates, or the fractional heat engendered would draw the temper of the tool and make it uesless. The first ingot of what was termed "self-hardening" steel which could be successfully forged was produced by the late R. F. Mushet, in 1868, at Coleford, in the Forest of Dean. It soon passed into vogue wherever men used a lathe. Mr. Mushet's labors, and the calamities by which he was overtaken are extant in his own rather quaint book, now rare. His services to modern steel-practice are unquestionable. The Mushet type of self-hardening steel was not surpassed for 33 years. High Speed Steel of the modern kind had its birth in 1901. It soon revolutionised machine-shop practice and conferred incalculable benefits upon mankind.

Few mistakes are easier to make than that of believing that knowledge of any kind can be useless to mankind. Those who think that men waste time when they potter about in laboratories, mixing various things and looking to see what happens, not only fall into this error, but also misconceive the methods of the industrial chemist.

* High Speed Steel: a handbook giving the History of High Speed Steel, its Heat Treatment, and much other information of value to users. 1920. Edgar Allen & Co. Limited, Sheffield.

It is roughly true to say that all High Speed Steels belong to one of two classes—"special" steel, containing about 18 per cent. of tungsten; and ordinary tungsten steel with about 14 per cent. of this alloy—in either case with small quantities of other elements. But there is a vast difference between the working value of different brands of steel to whatever class they belong. Nowhere is the maker's name a more important guide to satisfaction.

Economy and Prices

High Speed Steels are not cheap. But the economies affected through their tool-making qualities make the price insignificant. A great deal more than the cost of Edgar Allen's "Stag Special" High Speed Steel can be saved by using it for the right purpose. So accurately have the requirements of the tool-maker been worked out, that it can be confidently said that whatever type of High Speed Steel, from the cheapest to the most costly, is properly employed, will save money out of all proportion to its price.

But to secure the full measure of this economy two things are needful. The variety of steel used must be the type designed for the purpose to which it is put: and the steel must come from an authenticated and thoroughly trustworthy service. Neglect of the first consideration means less than the attainable degree of efficiency: and in the conditions of the present day the maximum is none too good. Observance of the second means that uniformity can be relied upon. The steel will never be less good than the sample, and every bar will give exactly the same results as the rest. It follows that the brand on the steel is of first importance. Nothing but loss can result from buying a material of this importance on any other criterion than that of quality. The difference between the lowest price at which what purports to be High Speed Steel can be bought, and the price charged by a manufacturer who knows the importance of reputation, is so insignificant that it would be foolishness to consider it. Moreover, a competent manufacturer can tell his customer exactly what steel to use for every specified purpose, and he will be as sedulous in discouraging the use of a type that is too poor for its work, as in demanding that the best be used where the best will give service commensurate to its price. "Often" says the author of the Edgar Allen book "High Speed Steel," in describing the work proper to be done with the famous "Stag Special" Steel, "often tools made from High Speed Steel of good average quality will break down under the strain of this special work. It is, therefore, perfectly economical in such a case to use the higher-priced Steel. It has a longer life and gives better service." But he is just as emphatic in advising the cheaper grade of Edgar Allen High Speed Steel (Edgar Allen "Air-hardening type") when the job does not require the superior grade. It is mentioned, however, that even this ranks as a "best" steel. The reports of practical users, which form not the least instructive features of this book, are evidence of this fact.

A Work of Reference

For its practical hints on selecting the right grade of Steel for different requirements, and its clear instructions for heat treatment and annealing, this book should be placed in the hands of foremen, besides being filed in the office. In the former place it will save tool troubles. In the latter, through the memorandum, at the end, of the details required to be stated when ordering High Speed Steel, it will obviate much needless correspondence. The thoroughly practical nature of the working instructions given will win the respect of the men whose experience is essential to the good performance of any Steel. A word should be said in commendation of the admirable way in which the book is illustrated. The various forming-tools, milling cutters, drills, bits and the rest look as though you could pick them off the paper: and the illustrations have practical value. They are not inserted merely to look pretty.

FAR EASTERN IRON AND STEEL

General View of the Japan Steel Works at Muroran

THE iron industry in Japan is still depressed. The Toyo Foundry and four others received Y.4,000,000 from the government some time ago and have maintained business. Owing, however, to slack demand and accumulated stock it is said they will be unable to continue unless further financial aid is forthcoming.

The Kenjiho and Penchihu foundries may be able to obtain necessary funds from the Mitsubishi and Okura companies, respectively. The Tokyo Iron Foundry has recently called the second instalment of shares amounting to Y.4,000,000, and the Tanaka Iron Works has also incurred a temporary loan. Many of the smaller establishments, however, find themselves in a financial position which may render them incapable of continuing business.

Measures for relief are being considered in official and private circles, such as an increase of import duty on imported iron, and the establishment of a selling union.

It is thought the most effective plan of help will be the formation of a combine of different establishments. This proposition is before the economic and financial committee. While it is more practical for the smaller establishments to combine on a solid financial basis, it is thought it will be a difficult task to effect a point of agreement and perfect understanding between different concerns, relative to respective business interests and relations.

Plans to establish a common selling guild among large iron establishments, including the Toyo, Penchihu and Mitsubishi concerns have not reached a state of maturity, though negotiations are still proceeding.

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N.Y.K. POSTPONES SHIPBUILDING PLAN.—It is reported that the Nippon Yusen Kaisha has decided to suspend the construction of 500,000 tons of new vessels. Of the 500,000 tons shipping provided in the new construction program, fourteen large boats with a combined tonnage of about 100,000 have been already built or purchased. In addition to the above vessels which are already in the service on different lines, the company has issued further orders to the Yokohama dockyards for the construction of seven 7,000 tons cargo-boats including an ice-breaker, to the Mitsubishi dockyards three 10,000 tons cargo-boats, to the Denny dockyards two 6,000 tons passenger boats and eleven other steamers, their combined tonnage reaching about 180,000.

Thirty-two more vessels with an aggregate tonnage of about 320,000 tons remain to be built according to the original plan, but in view of the general inactivity of the shipping and shipbuilding business and the tone of the prices of iron and vessels the company has decided to temporarily postpone the execution of the remaining part of the program. It is said the seven ex-German steamers handed over to Japan as trophies of the war, including the ***Cap Finister***, 14,502 tons, ***Bardenhead***, 8,959 tons, and ***Kleist***, 8,959 tons, are to be placed at the disposal of the company upon their arrival in Japan early next year. The six new cargo-boats building at the Yokohama dockyards to the order of the company are expected to be completed by the end of next year, one of them, namely, the ***Takaoka Maru***, to be finished next December.

* * *

THE NEW CHINWANGTAO IRON WORKS.—Mr. Lu Taio-yuan and Mr. Yen Jen, co-directors of the Pao-hsin Iron Mining Company, of Anhui, have memorialized the Ministry of Agriculture and Commerce regarding their co-operation with the Kailan Mining Administration, of Tientsin, for the establishment of an iron foundry in Chinwangtao. The proposal is to transport the iron ores of the Pao-hsin Company from Anhui by the steamers of the Kailan Administration to Chinwangtao for the manufacture of steel, while the coal and coke will be supplied by the Tangshan mines and the initial expenses will be provided by British capitalists. The most up-to-date furnaces, under the supervision of British experts, will be imported from England, and the promoters are petitioning the government for exemption from the payment of inland likin and export duty for a period of ten years, so as to enable the development of the Chinese steel industry through Anglo-Chinese co-operation. The people of Anhui support the scheme.

* * *

IRON INDUSTRY FOR DUTCH EAST INDIES.—The mining department of the government of Netherlands India has issued a comprehensive report on the possibilities of the development of iron mining and iron and steel manufacture in the island of Celebes. Government engineers have made extensive preliminary studies and surveys of the entire situation, and it appears that either the government or private enterprise will undertake the development of the field in the near future, although the part the government may take in the actual control of the industry has not as yet been fully determined.

The largest ore field to which recent investigations have been directed are those of central Celebes in the Larona district, lying near Towoeti Lake. The survey of this field showed 160,000,000 tons of ore, containing an estimated iron content of 5,000,000 tons; and there is believed to be 5,700,000 tons of iron in an additional 210,000,000 tons of ore that have not as yet been completely surveyed and tested. This field holds the best promise for early and profitable development, since it lies within 25 miles of a deep-water bay on the coast and may be very largely worked by electric power, which can be generated from several waterfalls along the Larona River. This river flows from Towoeti Lake to the sea, descending about 300 meters in a distance of 20 miles; about 200 meters of this fall occurs within a length of about 8 miles. In this distance it will be possible to utilize four falls of approximately 45, 25, 30, and 80 meters, respectively, the last-mentioned fall of 80 meters to be attained by the construction of a dam 45 meters high in addition to the natural fall of 35 meters. There is also a possibility of utilizing other falls of about 25 meters above those mentioned, as well as falls below of an additional 50 to 60 meters.

Computing the natural overflow from the Towoeti, Mahalona, and Matano Lakes, together with the average rainfall draining into the river, it is estimated that 2,610,000,000 cubic meters of water are carried annually by the Larona River, or an average volume of 83 cubic meters per second. Having the lakes as natural reservoirs for retaining the heavy rainfall of the rainy season through the dry season, the rate of at least 80 cubic meters per second should be maintained throughout the year. It is then estimated that turbines situated at the four points along the river and utilizing the average flow of 80 cubic meters per second will develop 144,000 horsepower.

Practically the whole ore field lies on or very close to the surface, the purest ore being on the top, so that the working should be possible at a minimum cost. The ore vein over the entire field varies in depth from 4 to 22½ meters, the average depth, calculated from 43 widely separated drillings, being 11.6 meters. The iron content of the ore varies from about 45 to 50 per cent. The average of nine analyses shows the iron content to be 50.55 per cent., while the manganese content is 1.19 per cent. and nickel 0.38 per cent. Rather incomplete analyses as to the sulphur content indicates about 0.14 per cent.

BENGAL BRIDGE & BOLT COMPANY.—The Bengal Bridge and Bolt Company, Limited, propose to increase their capital to Rs. 50,000,000 by the creation of 250,000 new shares. In their report for the half-year ended June 30th the directors mention that the bolt and river plant, since removal from Ramkristopur to Shalimar, is producing 120 tons per month of highly profitable work, and with new machinery which has now actually arrived, and in course of installation an outturn of 250 tons per month will soon be attained. During the half-year the company's profit was Rs. 2,90,233.

* * *

COAL AND IRON IN THE PHILIPPINES.—The report of the Philippine Bureau of Science says that very little of the iron produced in 1919 was made into pig iron in this country. Most of it, 18,598 metric tons valued at P.92,990, was exported to Japan in the form of ore. Only 67 metric tons were made into pig iron in the Philippines, and this was in the Angat district, where the industry is entirely in the hands of Filipinos. Practically all of this iron goes into the making of plowshares. The iron mined and exported by the Japanese came from Calambayanga Island in the Paracale district. Undoubtedly market conditions at the close of the war made further exportation of this iron ore impossible and the industry ceased early in the year. The export tax of P.2 per ton is a serious hindrance to the development of the iron industry.

In regard to coal, the report says it is extremely gratifying to see the industry at last coming into its own in the Philippines. The largest producer of coal is the Philippine Coal Mining Company on the eastern end of Batan Island. This company is producing over 300 tons of coal a day, and the officials of that concern are to be congratulated upon their output.

* * *

DROP FORGINGS.—J. H. Williams & Co., makers of Superior Drop Forgings and Drop-Forged Tools, with works at Brooklyn and Buffalo, N.Y., U.S.A., have just issued a catalogue—4×6—160 pages—fully illustrating and describing their standard stock specialties. These include several new lines of goods, viz: "Agrippa" Turning-Tool Holders, Set Screw Pattern, "Agrippa" Boring Tool Posts, "Vulcan" Forged Cutter Tool Holders, and several new assortments or sets of Drop-Forged Wrenches.

The book contains, also, a description of the drop-forging process in very simple, non-technical style for the benefit of those not conversant with its details.

* * *

THE TATA IRON AND STEEL COMPANY, LIMITED.—The directors of this company have issued their report and profit and loss accounts for the year ending 31st March, 1920, which show that the company's net profit during the year amounted to Rs. 11,531,363 which, with the sum brought forward from the last year's account, makes a total sum of Rs. 11,6-30,176. From this the directors have carried to depreciation fund account Rs. 5,500,000, while a sum of Rs. 1,109,375 has been distributed as ad interim dividend for six months ending 30th September, 1919, and they now recommend a final dividend of 6 per cent. per annum on first preference shares, a final dividend of 7½ per cent. per annum on the paid-up capital on second preference shares, a final dividend of Rs. 9 per share to the ordinary shareholders, and a dividend of Rs. 60-13-4 per share to the deferred shareholders, carrying forward Rs. 264,551.

The scheme of extensions is being vigorously pushed on, and a considerable amount of machinery has been received. The third blast furnace, known as the batelle furnace, was completed during the year and put into operation. The 300 drag ovens constructed temporarily to provide coke for this furnace are in full operation. The seventh open hearth furnace was brought into operation recently. The plate mill is being completed and will, it is expected, be in operation by the beginning of next year.

The progress in mining and prospecting departments has been satisfactory. Mine No. 2 at Gurumaishini has been opened and the increased requirements of the plant have been met in full. The town department has been re-organized by the appointment of Mr. S. K. Sawday, late of the Indian Civil Service, as town administrator, and Mr. F. C. Temple, M.I.C.E., M.I.M.E., M.R.S.I., late sanitary engineer to the government of Bihar and Orissa, as chief town engineer. Additional bungalows and buildings with drains and roads have been constructed during the year.

A detailed scheme has been completed for supplying water for the present town and future extensions, sufficient water being provided to meet the needs of 150,000 people. The welfare department is being re-organized under Mr. Brokenshire who has been specially brought out from England for this work.

* * *

BENGAL IRON COMPANY.—Arrangements for a largely increased output by the Bengal Iron Company have made good progress. An additional furnace is to be installed shortly, and by the end of the year the company's pig-iron production alone will be increased by over 25 per cent.

The Bengal Iron Company, capitalized at £2,500,000, is a reconstruction of the Bengal Iron and Steel Company, which was formed in 1889 to acquire from the Indian government a 999 years' lease of ironworks and coal mining properties of about 1,500 acres in Bengal.

During the past few years the record of the company has been one of continued progress. This is indicated by the following figures :—

	Profit	Dividend
1913	£54,754	12%
1914	£58,559	12%
1915	£121,522	24%
1916	£149,380	24%
1917	£136,874	30%
1918	£280,823	32%

In 1910 the company acquired large deposits of high grade ore, the working of which has, no doubt, in a large measure contributed to the increased profits.

Apart from the natural growth of the Bengal Iron Company, it is favored by the general conditions which have arisen in India as a result of the war.

* * *

PEKING BLAST FURNACE.—The Lungyen Mining Administration is preparing a site for the new blast furnace at a point called Sanchiatien on the Mentoukou Branch of the Peking-Suiyuan Line, about ten miles from Peking. Orders have been placed for the necessary material and equipment. Iron ore will be supplied from the Lungyen mines near Hsuan-huahsien. Limestone will come from the new quarry which is being opened near Chang-chungshan, and a branch line of railway is being laid from the quarry to the Peking-Mentoukou line, so that this material can be transported directly to the furnace stock bins. Coal and coke will be secured for the present from subsidiary mines along the Peking-Hankow Line. Messrs. Perin and Marshal, 2 Rector Street, New York City, N.Y., are the consulting engineers.

Must Have Foreign Steel Markets

(Special Correspondence of "The Far Eastern Review")

New York, November 2.—To manufacture steel at her maximum capacity, the United States must have foreign markets, Mr. A. H. Holliday, manager of exports of the Jones & Laughlin Steel Co. told the American Iron and Steel Institute. "The per capita consumption of China and Japan for 1918," said Mr. Holliday; "based on the conservative estimate of 383,-000,000 combined population was 6.5-lbs. of finished steel compared with the United States per capita of 517-lbs. for 1913 based on 98,000,000 population." Mr. Holliday singled out China as one of the undeveloped fields that can assist to assimilate increased world's production of steel.

First Chinese Manganese Reaches New York

(Special Correspondence of "The Far Eastern Review")

New York, November 16.—The first shipment of Chinese manganese reached New York on the steamer *Grace Dollar*, viâ the Panama Canal. The consignment was 2,000 tons.

First Chinese Iron Ore Landed at Baltimore

(Special Correspondence of "The Far Eastern Review")

Baltimore, Md., November 3.—At the Canton ore pier here 2,540 tons of iron ore from China are now being unloaded from the Green Star Line steamer *Canibas*. Although ships have been sailing between this port and China since the clipper days and the pioneer China trader, *Empress of China*, this is the first time that Chinese iron has been an item of cargo. The Baltimore *Sun* says: "The shipment probably means that a new market has been created for Chinese ore and that in the near future large quantities will be brought here for distribution."

"Grand St. to Move to Shanghai"

(Special Correspondence of "The Far Eastern Review")

New York, November 3.—The sweat shops of the Grand St. region will move in a body to Shanghai, ready-to-wear men say, if the Dyer bill gets through Congress. New York City *Women's Wear* prints dispatches from its Shanghai correspondent showing that high hopes are entertained of huge profits to be made out of cheap Chinese labor, against which even the underpaid workers of the Lower East Side could not compete. For several years past, despite lockouts that caused riots, bloodshed and starvation, trade union organization has been making headway. In the meantime, attention of the master garment-makers was drawn to the possibilities of Shanghai as a world's centre of cheap ready-made production. Says the Shanghai correspondent of *Women's Wear* :—

> "Fear of legislation influenced by American labor organizations is the chief obstacle blocking any plans of large apparel manufacturers in the United States looking to the establishment of factories here for the making of ready-made garments with cheap and efficient native workers, trained and supervised by American foremen. Inquiries have been made by a few large organizations in the States and in two instances plans were tentatively completed, only to be abandoned because of the uncertainty of the possible action of the labor unions at home, whose campaign against the making of garments for American consumption by the Chinese might inspire legislation similar to that enacted by Australia, which, in effect, would wipe out the capital necessary to put the plans into successful operation."

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

Baldwin Locos for China.—Ten Baldwin locomotives have been shipped for the Peking-Suiyuan Railway, China, also ten Baldwin locomotives to Peking-Mukden Railway, China. Twelve Baldwin locomotives for the Canton-Hankow Line, Hunan-Hupei Section, have recently arrived at Hankow.

Enlargement of Railroad Station, Osaka, Japan.—The Umeda main railroad station of Osaka will be enlarged in the near future. A large locomotive round house is already under construction.

Bridge Construction Car, Japan.—The Hamatsu Works of the Imperial Government Railways, has recently built a bridge construction car, with a length of 70 feet, 7 feet in width, with 16 wheels bogie trucks.

Saiki-Kanbara Railway, Japan.—The construction of the government railway between Saiki and Kanbara, Kyushu, a distance of 9.8 miles, has just been completed, and the railway is open for business. The chief products of the districts are—railroad ties and general lumber.

Lhasa-Indian Line Project.—The visit of Mr. C. A. Bell, political officer, to the Dalai Lama has revived hopes of the construction of a railway line from Lhasa to India, along the banks of the Amuchu and Tursa rivers.

Railway Sleeper Tests, Japan.—The Japanese Railway Department has been testing timber, iron, and concrete sleepers, since 1913, and finds that the (larch?) sleeper is good for six or seven years. This has determined the department to go into the forestry business on its own account. The tests of steel and concrete ties are still going on. It is estimated that the government railways of Japan use about 3,500,000 sleepers annually, at a cost of Yen 4,550,000.

Rolling Stock Bonds.—Chinese bankers suggest that the ministry of communications issue bonds to the amount of $6,000,000 silver, for purchasing cars to make up the present shortage on different lines. The Banks of China and Communications recognize this as an industrial loan, but claim the right of supervision over the expenditure. The loan is now under negotiation.

New Private Railway, Japan.—The Nota Tramway Company, Ltd., of which Mr. Tsuda Chusuke is chairman, has received permission to construct and operate a tramway line 61 miles in length, connecting Hagui-machi with Wajima-machi in Ishikawa Prefecture. Its cost is estimated at Yen 6,500,000.

Kobe-Osaka Four Track Line.—Part of the line between Nada and Ashiya has been completed at a cost of Yen 1,500,000. Work is being pushed ahead on the balance of the line, estimated to cost Yen 6,500,000.

West Korean Railway Company, Ltd.—The line between Sarien and Sainei, 14 miles in length, was completed in December, it will connect with the main S.M.R. Line. A locomotive and car house will be erected at Sainei.

Actual Earthwork Costs in China.—The Kin-Han Railway Administration proposes to construct the west section of Chang-Si line from Si-Chia-Chuan to Wu-Chiang-Hsien, a length of about 200 *li*, in order to provide employment to the famine sufferers. The usual contracting methods are to be abolished doing away with the profit paid to contractors and earth work done by the laborers will be paid for as follows :—

Height of embankment.	Cents per 100 cu. ft.	
Under 5 ft. (Chinese measure)	c18 silver	.09 gold
Between 5 and 10 ft	c20 ,,	.10 ,,
Above 10 ft.	c22 ,,	.11 ,,

The Hukwang Railway.—In order to utilize the famine labor in North China, the director of the Szechuan-Canton-Hankow Railway has decided to renew the work of building certain sections of the line by employing the famine sufferers. At a railway conference held in Peking some time ago, a resolution was passed authorizing the authorities of the Szechuan-Canton-Hankow Line to raise a loan for the work and, accordingly negotiations were entered into with certain American syndicates for the loan. It is understood that everything concerning the stipulation of the loan has been definitely settled between the American financiers and the authorities of the Szechuan-Canton-Hankow Line (?) The contract for the loan is to be signed after Mr. Yen, the director of the Szechuan-Canton-Hankow Railway, arrives in America to make further arrangements with the American financiers interested in the deal.—Chinese Press Report.

Railways in the Celebes.—On July 19 the first ground was broken for the Takalar-Macassar-Maros railway, destined to extend through such districts as are rising economically or are likely to prosper in the future.

The extended line will run from Maros by way of Pangkadjene-Segiri-Tanette, Mariori and Soppeng to Singkang a distance of 150 K. M.; and the costs are estimated at 10 million guilders approximately.

Meanwhile, although the State Railway Service is dreaming of laying down railways all over the south-west, the Takalar-Macassar-Maros line is the only one that will be constructed at present. The length of the line will be about 72 K. M., the costs being estimated at a round 3 million guilders. The line passes through fertile and densely populated plains of Goa and Maros, that hold respectively 160,000 and 70,000 inhabitants, not counting the people living beyond the ricefield area. The Goa plain covers about 45,000 *bahoes*, the Maros plain about 12,000 *bahoes*. They yield a considerable quantity of good rice of which, a monthly average of 400 piculs is shipped at Macassar, the want of the population having been supplied in the first instance.

The estimate of the profits and expenses of the Takalar-Macassar-Maros line shows a favorable balance.

The proceeds from the passenger traffic are estimated at a round f.180,000; from the goods traffic at f.75,000; and from other sources at about f.16,000. The managing expenses will amount to about f.130,000 a year, leaving a favorable balance of f.1,000,000 yearly.

German Railway Material for Java!—Respecting the order of the Netherlands government for thirty-seven railway engines for Java from Krupps, which was contradicted in the Dutch papers, the *Netherland Indies Review* is informed by an irrefutable authority that Krupps have actually received this order, and that their tender which was approximately fl. 12,000,000, was lower than those of British and American competitors, which were in the neighborhood of fl. 20,000,000. Furthermore, the Essen firm is straining every endeavor to ensure that they shall not be "entrusted with the supply of engines" alone, but, that orders for wagons, rails and other equipment required for railway expansion in the Netherlands East Indies shall be passed to them in due course.

Ching-Meng Railway.—The *Sinwanpao* reports that the Ching Meng branch line of the Taoching Railway in Honan is now being surveyed and the land needed is being bought up.

New Construction, Manchuria.—The construction of the following railways in Manchuria is contemplated :—

	Miles.
Kirin-Hweining Line	160
Kirin-Kaiyuan *viâ* Hailungcheng	170
Szupingkai-Taonanfu Line	100
Chinchow-Aigun Line	700
Changchun-Taonanfu Line	150
Taonanfu-Jehol Line	370
From a point on the Taonanfu-Jehol Line to the sea	150

Chefoo-Weihsien Grading (?).—The ministry of communications states that grading of the Yen-Wei Line from Chefoo to Wei-Hsien, a distance of about 200 miles, is now in progress, under the direction of Mr. Chao, former district engineer of the Tientsin-Pukow Railway.

Tsang-Shih Line.—The construction of the Tsang-Shih Line from Shih-Kia-Chong to Tsang-Chow, has been started and grading is now in progress. This line is approximately 210 kilometers in length and will be constructed jointly by the Peking-Hankow and the Tientsin-Pukow Railways.

Canton-Hankow Survey.—On account of the unsettled political conditions in the Province of Hunan and also by reason of insufficient funds, the survey of the Canton-Hankow Railway from Chuchow to the Kwangtung Boundary has been suspended for some time past, but by order of the minister of communications and the director-general of the Han-Yueh-Chuen Railways, negotiations have recently been undertaken with a view to resuming the surveys of this line. Arrangements have been made for Mr C. J. Carroll in addition to his duties as engineer-in-chief of the Han-I and I-Kwei Sections, Szechuan-Hankow Railway,

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Payment of higher interest rates will not always secure funds. In a situation where larger amounts are required for handling individual transactions and restriction of loans may be necessary to provide for essential activities, "*side-tracked credits*" are doubly undesirable.

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IRVING NATIONAL BANK

WOOLWORTH BUILDING, NEW YORK

to take charge of the survey party which will very shortly resume the survey of this line.

TRAMWAYS

Peking Tramways.—As a preliminary step towards the building of tramways in the Chinese capital, the Peking Municipal Bureau has appointed a party of experts to survey the principal streets in the city, beginning with the sections of the street at Tungshihpailou and Hsishihpailou, where the authorities plan to build two main lines.

Canton Tramways.—Work is to begin soon on the construction of the Canton Tramway. The $3,500,000 capital desired has been almost fully subscribed and some $600,000 worth of materials for the proposed street railway are said to have been ordered.

Electric Tramway, Kyoto.—The Kansai Electric Tramway Company, Ltd. was organized recently with a capital of Yen 10,000,000 for the operation of tram cars between Kyoto and Nara. The application has been presented to Kyoto prefectural office.

Electric Tramway Extension, Japan.—The Okayama Electric Tramway Company, Ltd. has been granted permission to construct and operate a line between Yumino-machi and Taiunji-machi in Okayama city.

New Electric Tramway, Tokyo.—The Todai Electric Tramway Company, Ltd., was organized recently by Mr. Torahiko and others, with a capital of Yen 8,500,000, to operate an electric line from Kanda-ku in Tokyo to Omiya-machi in Saitama prefecture, current to be supplied from a steam power plant. Permission, it is reported, will be granted subject to certain conditions, among which is one to connect with and form part of the new underground system, and when permission is granted, that work must commence within three years.

Okazaki Electric Tramway Company recently applied for permission to extend its line from Asuke, in Nagoya prefecture, to Sida in Nagano prefecture. The line passes through heavy country, and the estimated cost per mile is Y.100,000. The company will increase its capital when their application is granted.

Keihin Tramway Extension, Japan.—The Keihin Electric Tramway Company has applied for permission to extend its line from Tsurumi along the shore for a distance of five miles. This will assist in developing the shore lands now being reclaimed as sites for factories.

ELECTRIC LIGHTING, POWER, ETC.

German Dynamos for Nantungchow, China's "Model City."—Notwithstanding his recent visit to the United States and many after-dinner orations on Chinese-American business co-operation, Mr. Chang Chien has decided to order German dynamos and a complete German light and power plant for China's "model city," Nantungchow. After a conference with his elder brother, Mr. T. A. Chang, Mr. Chang Chien has placed a German engineer in charge of the electrification plans. Bonds are to be issued locally to cover the cost of installation and preliminary operation. The German machinery is expected to arrive in May. This announcement comes in curious confirmation of predictions made by the publisher of THE FAR EASTERN REVIEW. Antagonism to Japan does not deliver the American electrical business either in China or in Japan. In business, it always pays to keep out of politics.

China and Electrical Material.—Although there are considerable opportunities for British electrical firms to secure business in China, new electric plant being installed in many of the larger cities, caution (says a correspondent in *The Times Trade Supplement*) should be observed. This is emphasized by the fact that in connection with an electric light plant recently installed by a Japanese firm in a certain city in the Republic, so many natives have installed small petrol or oil-driven units and are selling light to those of their neighbors who can be included on the circuits, that the financial success of this municipal plant is doubtful. Chinese laws provide that all agreements or contracts entered into with regard to mines, railways, or other public property made between provincial authorities or private Chinese persons are invalid unless they have previously received the sanction of the Chinese government in Peking. So many serious misunderstandings have recently arisen on this subject that British firms interested in electrical or other undertakings should familiarise themselves with all conditions before they enter into any definite contract with municipal or other bodies.

Teikoku Electric Light Company, Ltd.—At its annual meeting held in Tokyo on November 3 this company voted to amalgamate with the Gaibo Electric Company, Ltd. (capital Yen 300,000) and the Toyok Kuni Electric Company, Ltd. (capital Yen 500,000). The plan is to reorganize with a capital of Yen 18,725,800, in which the Teikoku will hold 368,000 shares (par value 50, and 45 paid up) the Gaibo will hold 4,016 shares (par value 50, all paid up) and the Toyokuni 2,500 shares (50, all paid up.)

Katsuragawa Hydro Electric Company, Ltd.—Has received permission for the development of the Akano river, which will increase its power rights another 50,000 horse-power.

Want More Electric Light.—The Chapei (Shanghai) Chinese tax-payers have petitioned for extension of the electric light works, which are under the provincial control and have long been unable to supply sufficient current. The *Sin Wan Pao* says a reserve fund amounting to several tens of thousands of dollars has been built up. Why this money is not used in effecting the much needed improvement or extension, which would be both a legitimate and profitable investment, is a mystery to all outsiders. A joint petition submitted by the public bodies of Chapei to the governor at Nanking, asking for authority to use this reserve fund, has brought forth no response. Mr. Tsiang, manager of these works, is said to have tendered his resignation, as his suggestion for improvement was ignored by the governor.

Japan to Adopt New Wire Standard.—According to recent advices from Japan, ten of the principal electric wire manufacturers have issued a joint statement advising that they have completed preparations for the production of insulated electric wires and cords to meet the official standards published in October last. The manufacture of the old-type wires and cords which have until this time been used in Japan will be discontinued, it is stated.

Electrical Machinery Needed.—The Bukit Asam government colliery in Java badly needs an electric central and other machinery. These will be bought in 1921 at a cost of about two million guilders.

Electrical Supply for Pootung.—The Pootung Electric Supply Co. has finished testing its plant and has commenced the supply of current for lighting. The capacity is 300 k.w., which will be doubled as soon as the duplicate set arrives in Shanghai next month. The plant has been erected under the guidance of Mr. S. H. Dong, general manager and engineer-in-chief.

Loans to Electrical Enterprises, Korea.—The Bank of Chosen recently advanced Yen 40,000 to the Taikyu, Taiden, Gensen and Kaishu electric light and power companies, to enable them to carry out their extensions.

Gobishi Electric Machine Co., Ltd.—Organized with capital of Yen 1,000,000, quarter paid-up, for the manufacture of electric machinery. Office: 24 Minami-Konya-cho, Kyobashi-ku, Tokyo. Managing Director, K. Hirayama.

The Gumma Electric Company, Ltd.—This concern has about half completed the power plant and tunnel under erection at Kanaimura, Gumma prefecture. The transmission lines are now being erected.

Large Municipal Electric Power Scheme, Japan.—The Hyogo Prefectural Assembly has before its consideration a scheme to construct several hydro-electric plants to be operated under the management of the prefectural authorities and financed by prefectural loans, aggregating Yen 3,600,000. The scheme provides for the construction of nine power plants using the waters of the Sho and Chigusa rivers. The location and capacity of these plants are as follows; Fukuchi plant, 366 Kilowatts; Nishifuka plant, 464 kw.; Roga plant, 531 kw.; Himidani plant, 582 kw.; Ariga plant, 372 kw.; Nojiri plant, 615 kw.: Chiguya plant, 566 kw.; Kawasaki plant, 603 kw.; Usushino plant, 406 kw.; total, 4,505 kw. Construction is expected to commence in 1921. The plan provides for the completion of three plants every two years until 1926.

TELEPHONES, TELEGRAPHS, CABLES, WIRELESS

New Central Telephone Station, Tokyo.—The department of communications has decided to construct the new Tokyo central exchange in Marunouchi, at a cost of Yen 3,600,000. The new building will cover 4,000 *tsubo*. It will be five stories in height and built of steel and concrete. It will be completed by 1924.

Powerful Wireless Station, Japan.—Plans for a Y.200,000 wireless receiving station to be located in the Kwansai district of Japan have been submitted to the Diet. The station will be among the most powerful receiving stations in the world.

Wireless Telegraphy, China.—Nearly two years ago the Chinese government entered into a contract with the Marconi Wireless Telegraph Co., of London, for the erection of three powerful wireless stations, which would constitute the longest stretch in the world of wireless communication. The original plan provided for stations at Lanchowfu, Urumchi and Kashgar, but this has been changed owing to the different conditions brought about by the cancellation of independence by Mongolia and the return of the former dependency to the fold of Peking. Urga has been selected as the location of the first station in preference to Lanchowfu, and the work there has already commenced, the apparatus and material having been stored in

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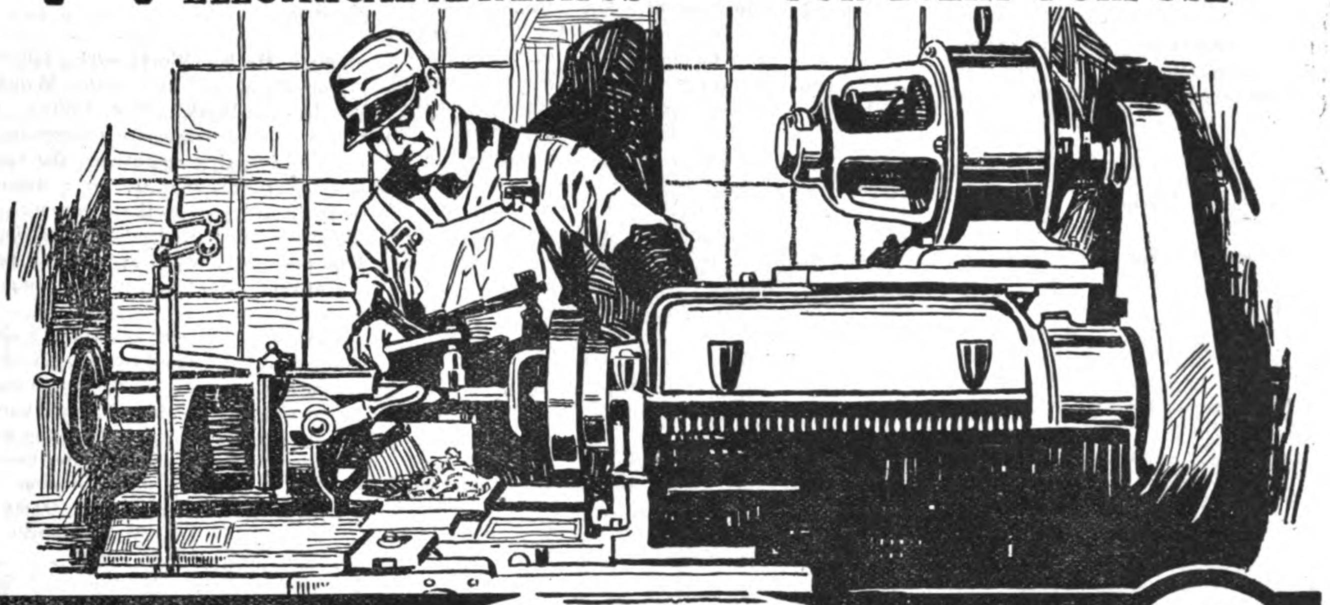

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a temple in the Mongolian capital for several months. An adjunct of this wireless service has been provided by the delivery of 200 portable wireless telephone field sets for military purposes. These were purchased from the same company. For some months past instruction in the use of these sets has been proceeding at Peiyuan, near the Yellow Temple, Peking. The men are inclined to indulge their own preferences rather than to carry out the particular duties to which they have been detailed. Notwithstanding this drawback, it is apparent that the instruments will prove useful in Mongolia, whither most of them are probably to be sent.

PUBLIC WORKS

Kowloon Improvements.—The Kailan Coal Mines purchased recently of over 500,000 square feet at Laichikok for $51,415 calls attention to the way Kowloon is growing, says the *China Mail*. The coal company will presumably stack large stocks of coal there, and have a deep water wharf. Near by the Standard Oil Company is reclaiming for a large extension of their depot. Not far away a wolfram smelting works is starting, and all round the Kowloon coast, from Cheungshawan right round to Kowloon Bay to the eastward, reclamation and development may be observed.

Macao Projects.—A solution is being found for the problem of the water supply. The public works department has some portion of the work now in hand and a contract has been let to Messrs. Turner & Co., of Tientsin, for other portions of the undertaking. A contract had also been let for putting the telephone wires underground; town drainage work was in progress; and an up-to-date equipment was coming for the fire-brigade. The great harbor scheme is the most striking improvement, and its completion will add many hundreds of acres to the area of the Colony.

Tokyo Public Works, 1921.—The total estimate for the city of Tokyo for 1921 is about Yen 30,000,000, of which Yen 2,200,000 is designated for the following new works: Two middle schools, normal and girls' school extensions; Tamagawa and Yedo river water works; Settlement work; Labor Hall; Water supply investigations; several parks outside city limits.

Public Works, Shidzuoka Prefecture, Japan.—The most important public works of Shizuoka prefecture for 1921 will be—Brigade construction, Yen 58,704; road construction, Yen 42,811; road improvement, Yen 500,000; river bank constructions, Yen 45,000; school constructions and educational expenses, Yen 74,451; purchase of agricultural machines, Yen 5,761; purchase of motors by the industrial office, Yen 1,622; appropriation for forestry, Yen 13,504.

Osaka Estimates.—The public works estimates of Osaka prefectures for 1921 embrace reconstruction of Syutoku Kan, to cost Yen 330,000; construction of wireless telegraph station at observatory, estimated cost Yen 2,105; construction of a higher girls' school, Yen 580,000; reconstruction of three girls' schools, Yen 25,000.

Yokohama Improvements.—The public works estimates of Yokohama and Kanagawa prefecture for 1921, include: Construction of No. 3 fire brigade station to cost about Yen 58,000; purchase of a motor-boat (5 tons) for water police, estimated cost Yen 13,000; establishment of a middle class school at an estimated cost of Yen 304,000; construction and enlargement of Yisaki harbor at an estimated cost of Yen 700,000, half of this sum will be borne by the national treasury; road construction over Hakone mountain to Mishima town, to cost Yen 170,000; construction of an iron and concrete bridge over the Banyu River at an estimated cost of Yen 393,000.

PORT WORKS, HARBORS AND DOCKS

Woosung Improvement.—Mr. Chang Chien's committee has drawn up plans for the proposed Woosung port development. The ministry of finance is asked to grant approximately a thousand acres of land to the Woosung Improvement Bureau and then to carry out the following steps after obtaining the consent of the Whangpoo Conservancy Board:—(1) Open Woosung as a commercial port; (2) Build a harbor and dockyards; (3) Build main roads for tramways; (4) Establish a stock company with a limited liability for the promotion of various industrial enterprises, with a capital of ten million yuan to be divided into 400,000 shares of $25 each.

Port of Pukow.—Mons. Francois has been engaged as the engineer to build the port of Pukow and an agreement was signed, December 10, at Peking.

New Dockyard, Tarui, Japan.—The government has recently granted permission for the construction of a large dockyard in Tarui, Osaka prefecture, and for the reclamation works of the Izumi Dockyard Company, Ltd. The reclamation works will be commenced within six months from the date the permission was granted.

Taki Harbor Works, Japan.—The reconstruction of this harbor in Ishikawa prefecture was commenced on November 23.

Harbor Works Estimates, Japan.—The home department of Japan has included in the estimates for 1921 an estimate of Yen 35,500,000, for the improvements of Yokohama, Shimuzu and Shimonoseki harbors, and the reconstruction of the Kiso and Hii river protecting works.

Harbor Project.—Plans have been prepared by the Samarang Harbor Board for a new harbor. The scheme proposed is to construct an open harbor with long breakwaters, which will enable vessels drawing up to about 30 feet to enter and discharge their cargoes into lighters in calm water, and the estimated cost of the work is £1,000,000.

Nagasaki Harbor Improvements.—The necessary funds have been voted for the improvements to Nagasaki Harbor, which are designed to:

To fill in the foreshore at Deshima for a length of 230 *ken* (1,372-ft.), and an average breadth of 26 *ken* (147-ft.), and to build a quay wall 14-ft. above low tide at which two steamers of 8,000 tons, or three of 5,000 tons, can moor. At a later date the railway line (now nearly a mile distant) is to be connected, and warehouses are to be built on the reclaimed ground.

To dredge to a depth of 30 feet in front and in the neighborhood an area of 100,000 *tsubo* (about 400,000 square yards), thus adding a third to the available area of this depth in the inner harbor.

To built a landing stage by the station, to enable goods to be loaded direct from the railway trucks to lighters.

These works are estimated to cost one-and-a-half million yen. Of this the government is to pay one-half, the other half will fall upon the city. The exact manner in which the sum is to be raised has not yet been decided. The work is to occupy three years.

Harbor Improvements, at Auckland, N.Z.—Plans are well under way for the completion of wharves and sheds at Auckland as well as the construction of three more wharves in order to meet the demands of the constantly increasing commerce of that city. Frequently the wharves are so badly congested that shipping must wait its turn. The Auckland Harbor Board has been authorized to place a loan of $4,866,500 for the developments indicated above, and the chairman of the board has announced that work will be pushed as rapidly as possible.

Dairen Harbor Works.—The following statement by an official of the South Manchuria Railway Co. Harbor Works Office, Dairen, tells how the Dairen harbor works are progressing:—

As to dredging operations, the fairway just outside the Basin, that is, for a distance of 400 ft. from the entrance to the Basin with the breadth of 600 ft. is being dredged to the depth of 32 ft. This piece of work is expected to be completed by the advent of winter, to be resumed next fiscal year.

The extension work of Wharf 2 (Main Wharf) is planned to be finished by the end of 1922, and, for the current season, 430 ft. of the northern extremity on the eastern side of the Wharf will be completed. On the completion of the work, the depth of value will be made more than 37-ft., quite capable of berthing shiips of over 20,000 tons.

Up to this year, some Y.1,000,000 has been laid out annually in construction works. The sum to be appropriated for 1921 and 1922 will be Y.1,500,000 or so. Most part of the work has to be done in the water, to add to its difficulty.

As to reclamation work, 40,000 *tsubo* has been reclaimed at Jijiko, 220,000 *tsubo* in the east of the Dairen River 2 at Hsiaokangtzu (Chinese Quarter of Dairen) and some 80 per cent. of a water area in Kodama-cho, Dairen, 900 ft. long and 300 ft. wide. The new reclaimed tracts at Jijiko and Hsiaokangtzu may be used as storage ground for Dairen Wharf goods, and that in Kodama-cho as a place of loading and unloading junk goods exclusively. The reclamation work in Kodama-cho is to be continued into the next fiscal year to the extent of about 130,000, *tsubo*. The question before the S.M.R. Co. management is the proposed construction of Wharf 4, on the completion of which exports and imports to the amount of over 2,000,000 tons may be handled, and in such event, an open storage yard of more than 100,000 *tsubo* capable of storing over 150,000 tons will be necessary. As matters stand, there is no further room for extension, and, in order to construct Wharf 4, the local Kawasaki Dock must be removed elsewhere. This removal, if accomplished, will make about 100,000 *tsubo* available for additional storage ground. The authorities directly concerned are at a loss where to find the new site for the Dock.

BRIDGES

New Bridge, Tokyo.—It is planned to build a stone bridge over the Nishimbashi road to the central station, Tokyo. The ground in front of the station may be used as an aeroplane station in the future. A police box, public telephone and electric clock will be built on the bridge. The cost is estimated at Yen 1,000,000.

New Bridges, Tokyo.—The Tsukiji bridge in Kyobashi-ku, Tokyo, will be rebuilt at a cost of Yen 260,000, in order to correspond with the widening of the new street to 100 feet. The present Kyobashi bridge will also be rebuilt in steel and concrete at a cost of Yen 110,000.

Fuji River Steel Bridge, Japan.—The Fuji-Minobu tramway company will construct a new steel bridge over the Fuji River, 170-ft. in length

and 15 feet wide, estimated to cost Yen 200,000. To be completed April 1921.

WATERWORKS

Dairen Waterworks.—In the supplementary budget of the Kwantung government, which has been passed by the diet in Tokio, appears an item of 4,681,380 yen, for the extension of the Dairen Water Works. This is known as the "Third Period," and the expenditure of the sum stated is to be spread over a period of five years, as follows: —433,500 yen in 1920; 1,192,495 yen in 1921; 1,243,895 yen in 1922; 1,103,495 yen in 1923, and 707,995 yen in 1924.

It is stated thaat the source of supply is to be at Lung-Wang-Tang, 22 miles from Dairen, where a reservoir is to be built, covering some 93 acres, with a depth of 120 feet.

The electric power house, of 1,200 kilowatt capacity, for pumping the water to Dairen, is to be established in Port Arthur, though, of course, the pumps themselves will be at Lung-Wang-Tang. The main pipe will be of 18 in. and the supply pipes of 16 in. diameter. Details of costs are as follows:—

	Yen.		Yen.
Reservoir	1,524,400	Buildings	18,500
Pumps	84,000	Setting main pipes	631,000
Power house and transmission of power to reservoir	314,000	Tunnel work	255,000
Machinery	100,000	Setting supply pipes	1,184,500

With the completion of this work there will be available 20,000,000 tons of water, sufficient to supply a population of 300,000 persons.

Chapei Chinese Want Better Water Supply.—The Chinese residents of Chapei (Shanghai) have protested to the provincial government of Kiangsu, demanding a proper extension of their inadequate waterworks. The manager is reported to have resigned in disgust. The waterworks are under provincial control.

BUILDINGS

Important Government Housing Scheme, Japan.—The Japanese railway department has designed a plan to submit to the Diet to construct houses for 40,000 employees at a cost of Yen 100,000,000, spread over a period of ten years. The average estimated cost for each dwelling, including land, is Yen 3,000.

New Industrial Schools, Japan.—The education department reports a total of 37 new industrial and commercial schools to be built in Japan the coming year, at a cost of Yen 4,000,000.

Osaka Medical University.—Owing to the higher costs of materials and construction, the Osaka prefecture has voted an additional Yen 1,800,000 to complete the university within the year 1922.

Soochow Y.M.C.A.—During the summer of 1920 a campaign was started for collecting a fund of $40,000 to erect a Y.M.C.A. building in Soochow. Plans have been drawn up by Mr. D. S. Yien, engineer-in-chief of the National Federation of Y.M.C.A.; work is expected to commence soon.

New University, China.—At a recent cabinet meeting, the decision was reached to organize a second national university in China to be known as the National South-Eastern University. Some departments are to be in Nanking and some in Shanghai. Organization has been entrusted to Dr. P. W. Kuo.

New Hotel at Zushi, Japan.—At a meeting of shareholders held on November 27, Mr. K. Takemori was elected president of the new company, which has paid-up the first installment of its capital of Yen 3,000,000. It is hoped that construction work will be shortly commenced in the new Sonan Hotel at Zushi, the popular beach resort near Kamakura.

New Steel Hangars, Japan.—The Japanese military authorities will erect two steel hangers with concrete foundations at the Kagamiga-hara aviation field, at a cost of Yen 1,000,000, to house the 69 machines received from Germany.

Settlement Hall, Tokyo.—The Tokyo Municipality will construct a "Settlement Hall" in 1921 at a cost of Yen 52,000.

New Hotel, Nagasaki.—Japanese and Chinese merchants in Nagasaki are planning to establish a hotel and restaurant on the site of the late Mr. Boeddinghaus's residence at Deshima. The capital is expected to amount to Yen 50,000.

New Municipal Buildings, Singapore.—The building of a new General Hospital in Singapore for the Colony will shortly be commenced. It will provide for 300 beds as against 100 at present, and for a further extension of 200 beds. A new District Hospital is also to be built in Singapore, to meet the needs of the native population. Other large works, which are at present under consideration, comprise a re-construction of the Medical School, a new Lunatic Asylum, anl a Tuberculosis Hospital. Suitable sites for the two latter have been selected in a healthy rural district, well outside the town of Singapore.

Hankow Tobacco Factory.—A large tobacco factory for the curing of tobacco is now being erected at Hankow, Honan, by the Nanyang Brothers Company. The design of the factory as well as the supervision of its construction is in charge of the Pacific Trading Co., Engineers.

Japanese Hospital for Shanghai.—A large hospital on modern lines will shortly be established in Shanghai by Japanese merchants, and will cost one million yen. The funds have already been subscribed by the principal Japanese firms in Tokyo having trade relations with China.

Wuchang "Y" Building.—The Y.M.C.A. at Wuchang recently let a contract for the new association building to be erected in the center of Wuchang. It is planned to start construction immediately under the supervision of the Y.M.C.A. engineers and it is estimated that the work will be completed in ten months. It will be a modern re-inforced concrete building with all the necessary accommodations for a building of this character.

MACHINERY

Canadian Trade with China.—Among a very general accession of (Chinese) business in practically all directions a noticeable point is the apparent mounting up of Canadian side by side with American machinery, the figures for the former being to value of Hk. Tls. 355,565 and the latter 1,412,196. These figures must, however, in the interests of accuracy be regarded with caution in view of the fact that it is probable that a good deal of American machinery finds its way across the Canadian frontier and is shipped thence in Canadian bottoms here. Machinery from Great Britain during the same period comes third in value, represented by Hk. Tls. 740,929 and Japan by 32,153. Another interesting feature in the returns and bearing some analogy too to those for machinery in relation to Canada, is the importation of motor-cars and motor-trucks.

America	312
France	1
Great Britain	16
Japan	3
Canada	72

Here again the Canadian returns require to be read with caution. It is somewhat deplorable that such an overwhelming preponderance of American over British cars should exist in Shanghai but that our fellow nationals may take heart of grace let us quickly record that as well as her 16 cars Great Britain sent here one motor-scooter.—*British Chamber of Commerce Journal.*

Demand for Machinery in Australia.—It may be safely stated that New Zealand will be obliged to spend vast sums in machinery. Woollen machinery is needed by existing woollen companies for replacement and extension of plant, and by new woollen companies, of which there are already two in the field, with every prospect of a third being formed shortly, says the *Trade Promoter*, of Sydney. Electric and power plants, electric cars and accessories are urgently needed. Dairy machinery and plant is also in request, and this covers butter and cheese plants, powdered milk, condensed milk and plants for dealing with the extraction of sugar of milk and casein. Mining machinery is also wanted, and building materials and builders' ironmongery are also in urgent demand. The materials cover everything needed in respect to brick, stone, concrete and wooden buildings: Corrugated iron, roofing tiles, porcelain baths, windows, doors, glass, hinges, locks and all the other items that go into the construction of dwelling houses. The government has let contracts for nearly 600 workers' homes, and in addition private enterprise is engaged in the construction of more than double that number. Owing to the urgency of providing dwellings for the people the government has found it necessary to exercise a measure of control, and buildings that are not a matter of urgency are being stopped and the available labor and material turned over to the necessary works.—*The World's Salesman.*

MINES, MINERALS AND METALS

New Phosphorus Mine, Japan.—The Mitsui engineers have discovered a great phosphorus mine on Taisho island in Okinawa prefecture, estimated to contain 15,000,000 tons of rock containing 28 per cent. of phosphorus. It is reported that the government steel works at Yawata has decided to purchase the output in preference to its supplies now being imported from abroad.

Kawamota Silver Mining Company, Ltd.—Organized in Tokyo with a capital of Yen 1,500,000, one quarter paid up, to operate mines. Office, 11 Sanchome Hirakawa-cho, Kojimachi-ku, Tokyo. Managing Director, K. Ishii.

Gold Mining in Amur Province.—According to a report British gold miner Windo (?) and American gold miner Tomoef who have come to Blagovestchensk have seen the representative of the mining department of the Blagovestchensk government and asked for the right of mining of dust gold for a term of three years, the condition being that after the term the mines and all the plants will be transferred to the Blagovestchensk government. They obtained the concession. There are many British and Americans especially Americans asking

for gold mine and trade in Amur province.—Exchange.

Tongshan Colliery Investigation.—As a result of the recent mine disaster at the Tongshan Colliery of the Kailan Mining Administration in which 425 Chinese miners lost their lives, a joint investigation is being conducted by the ministries of foreign affairs, interior, communications, and agriculture and commerce, with the object of determining as far as possible all the facts in the case, having in view the introduction of new laws for the protection of miners and other workmen.

Iron Mine in Chenkiang, Kiangsu.—An iron mine has been discovered in Pei-kung-toong mountain, about four miles from Chenkiang, a city lying on the south bank of Yangtze River, and along the line of the Shanghai-Nanking Railway. Funds are being raised for developing it. The ores have been found to contain 70 per cent. of pure iron and 30 per cent. of impurities. The quality is as fine as those of the Tayeh mine in Hupeh.

Minerals in Kowloon.—Five mining engineers are at present in Hongkong awaiting the arrival of drilling apparatus to begin prospecting for minerals and coal in the New Territory. The enterprise is backed by a substantial Anglo-Chinese syndicate. That iron exists in the New Territory is an established fact. Sir Paul Chater, some years ago, formed a company for the purpose of working an iron mine in the neighborhood of Taipo, but failure to find coal in the vicinity caused the indefinite postponement of mining operations. A Company to undertake dredging operations for tin was also formed in the Colony some seven or eight years ago, but sufficient tin was not found to make it a profitable enterprise.

Korean-Russian Co-operation. — Koreans at Blagoveschensk have organized a gold-mining association. They have been granted a permit, on condition of delivery free of twenty per cent. of the gold extracted to the Blagoveschensk government.

French Tonkin Mines.—Raymond Ferrant, general manager of Charbonnages du Tonkin, has given out the following information relative to the operations of his company :

"Our property in Indo-China is the largest coal mining project in the world covering an area of 22,000 hectares or more than 50,000 acres. Present annual output is about 800,000 tons, and our engineers estimate that the property would support that average production for about 40,000 years. Coal is of excellent quality running higher in carbon than ordinary bituminous. Volatile matter runs about 9 per cent. and ash 6 per cent. The coal is clean and the ash shows no fusibility.

"Our coal is not sold in the European market but goes to Japan and China principally. One large Japanese firm has contracted for a large quantity of coal, which will be marketed in Scandinavian countries.

"Our products are sold f.o.b., ordinary coal bringing $5 silver a ton and screened coal selling at $8.50 a ton. We are being pressed to supply coal to the European market but have made no contracts as yet.

"There have been no labor difficulties since practically all labor is native. We employ about 10,000 men, only 60 of whom are Frenchmen."

Rich Gold Mine Discovered in Japan.—The recently discovered gold mine in Amagi mountain is said to have a vein, six to seven feet in width, and can be traced for seven miles.

Tamatsukuni Mining Company.—This is a limited partnership organized with a capital of Yen 150,000 for mining sulphur. Office, 9 Yusoku-cho, Kyobashi-ku, Tokyo. Managing Director, T. Uyeki.

COAL

Kamikuni Coal Mining Company, Ltd.—Organized in Osaka with a capital of Yen 1,300,000, quarter paid-up, to engage in coal mining. Office, 18 Honda Niban-cho, Nishi-ku, Osaka. Managing Director, Genji Konishi.

Chinese Coal to England.—Ten thousand tons of Chinese coal is en route for England. It is of excellent quality, and can be sold cheaper than British coal. Chinese Republic's coal reserves are estimated to amount to 1,200,000 tons. Her present output capacity is estimated at 30,000,000 tons, of which 20,000,000 tons are consumed at home. Coal exports from China have been running between 1,000,000 and 2,000,000 tons annually, since 1913. The price of Chinese coal at the pit mouth, at the end of last month, was 2 shillings and 4 pence. Production costs show little change over a period of years.

Imperial Fuel Company, Ltd.—Organized in Japan with a capital of Yen 500,000, one quarter paid up, to operate coal mines. Office, 3 Nagawa sawa-cho, Kyobashi-ku, Tokyo. Managing Director, M. Okada.

Kansu Coal Mining.—There are 12 small companies engaged in coal mining in the Siningfu district. The coal mines are situated in the hill in the North Valley, 27 miles northwest of the city. The system of working them is crude. Nevertheless the mines are some 150 to 200-ft. in depth and somewhere near 9,000,000 catties or 5,000 odd tons of coal are dug out every year by means of punches and hammers only. In the winter time about 140 or 150 carts are regularly in use carrying the coal to the cities of Sining, Huang-yuen and Tatong, as well as to the district round. In the summer only 80 odd carts are in use, as the farmers are busier. Boys of tender age are employed in the mines to carry the coal from the place of working to the pit bottom and it is drawn up in hides. Relays of men, chiefly blind men, are engaged in drawing the water from the mines day and night without ceasing. In recent years a tax has been levied on the coal owners to support the Police Force. There is not much demand for the large pieces of coal, save in the Yamêns and among the better class who burn it in open large brass basins or in stoves. The small coal is in greatest demand, for it is used by the people in the cities and large towns where other fuel is scarce, to make their food, the fire being kept burning by means of the wind box. It is also used to heat the *kangs* in winter on which the people sit and sleep and is free from the strong odor that manure always carries with it. The very poor people use manure. The coal dust is mixed with cow manure and made into bricks, which are also used for heating the *kangs* and are, further, burnt in the brass basins, to keep the hands warm as well as to boil tea or hotwater. Coals are sold at 8 to 10 cash a catty according to demand. The smaller kind is sold by measure 35 cash per *shen* and the coal bricks at 13 cash each.

OIL

Shale Petroleum Company, Japan.—Dr. S. Yonekura, formerly chief of the South Manchuria Railway coal mines, has invented a process to extract crude petroleum from coal and shale and is projecting a company with a capital of Y.20,000,000 with the aid of the navy department and certain capitalists. It is proposed to establish the plant somewhere near the Sumitomo copper works at Ajikawa, Osaka, whose capacity will be 1,000,000 tons of oil from 10,000,000 tons of shale and coal.

Japanese Oil Output Declining.—The petroleum oil output in Japan continues to decrease. Latest returns based on the investigations of a certain mining company in Tokyo give the total quantity of crude oil produced at all leading oil fields throughout Japan during the first half of the present year as 961,755 *koku* (1 *koku* is equal to 39.7033 gallons), the figure showing a decrease of 3,365 *koku* compared with the yield of the corresponding period of last year. The output of the oil field in Hokkaido, Akita and Yamagata showed more or less increase compared with the previous period, but the figures for other prefectures generally decreased, as will be seen from the following table :

	Jan.-June 1920	Jan.-June 1919	Decrease for 1920
	(Figure in *koku*)		
Hokkaido	4,013	2,968	Inc. 1,045
Akita	427,512	370,222	Inc. 57,290
Yamagata	30	—	Inc. 30
Niigata	529,503	591,101	61,598
Shisuoka	630	671	41
Nagano	67	98	31
Total	961,755	966,060	3,305

Oil in Borneo.—The Kuhara firm has been prospecting petroleum oil in Borneo since 1919 on a concession acquired there with an area of 30,000 square miles, and hope of success has just been reported. It is also stated that the Japan and Hoden Oil Companies are jointly carrying on negotiations privately for the buying up of an oil company in Dutch-Indies.

Testing Tayabas Boom. — The Richmond Petroleum Co., a subsidiary of the Standard Oil Co. of California, will commence drilling for oil early this year on a large tract of land in Tayabas province, Philippine Islands. Twenty-seven American experts have arrived in Manila to supervise the work.

INDUSTRIES

J. O. P. Bland Organizes British-China Trading Corporation.—In 1919 a charter was obtained from the Chinese government by certain British traders for the purpose of developing an industrial area in China outside the limits of the Treaty Ports. At a meeting held yesterday (November 4, 1920) at the offices of the Federation of British Industries Mr. J. O. P. Bland outlined the scheme under which a British-China Trading Corporation would be worked. The Association would be composed of British and Chinese firms. Eventually a committee was formed under the chairmanship of Sir J. Kemnal for the purpose of taking the necessary steps to inaugurate the Corporation on a sound basis. Its members are : Messrs. E. F. Oldham, S. Springer or H. Hobden (representing the Federation of British Industries), J. O. P. Bland, John Noble, C. E. Tatlow, R. M. Bewick, and R. G. Perry, with power to co-opt others.—*London Morning Post.*

Woollen Factory for Lhasa.—The Dalai Lama wants estimates for an up-to-date woollen factory to be put up at Lhasa. Negotiations are proceeding.

Water Power Concession, Java.—A concession for 40 years has been granted for the use of the waters of the river Moesi, above Bankoelen, solely for the purpose of manufacturing synthetic nitrogen compounds (fertilisers and the by-products of their

manufacture). The concession also carries with it the right to mine the necessary coal and lime needed from the formation around the power station, as well as to construct a railway from the works to the port.

Rengo Paper Manufacturing Co., Ltd.—Organized in Tokyo with a capital of Yen 2,000,000, quarter paid-up, to engage in manufacture of paper. Office, 1 Itchome Taihei-cho, Honjo-ku, Tokyo. Managing Director, J. R. Geary.

Cement Industry, Tasmania.—Efforts are being made to float a company with a nominal capital of £600,000 for working a plant with a minimum capacity of 38,000 tons of high-grade cement per year, to be erected upon Maria Island, off the east coast of Tasmania, where it is said extensive limestone deposits exist. The company is to be known as the National Portland Cement Company, Ltd., the address being, Equitable Buildings, Collins Street, Melbourne. £40,000 are to be expended in the purchase and erection of a plant for developing 500 tons of cement per week.

New Cement Factory, India.—With an authorized capital of Rs. 25 lakhs a cement manufactory is to be started at Bezwada. Calculating the cost of manufacturing a ton of cement at about Rs. 35 a ton, the promoters count upon a liberal margin of profit after meeting all expenses. The managing agents are to be Messrs. Rajagopal & Co., of Madras.

Proposed Sugar Refinery, China.—Mr. Y. S. Mar, a returned Chinese merchant, together with leading confectionery merchants in China, originally selected Nantungchow or Woosung, as the site for a new plant, but now Mr. C. Y. Kuo, one of the directors of the Chinese Overseas Federation, promises to co-operate with him, and they will erect their plant at the new harbor of San Man Bay in Fukien with a capital of $5,000,000 silver.

Proposed Brewery, China.—Mr. F. C. Zia is planning to erect a brewery, with a capital of one million yuan at West Lake near Hangchow. Water from this lake has been analyzed and found impure, so a well is to be sunk for the supply of water. The sales office will be in Shanghai.

Cotton Mill, Mukden.—Consul Pontius reports the contract with an American firm covering the establishment of a cotton mill at Mukden. The requisite machinery, including 10,000 spindles and 100 looms, represents an outlay approximating $700,000. The entire plant is to be modern in every respect and operated as an official venture. The cultivation of cotton in the Mukden district is being promoted to supply the needs of the mill.

Taisho Iron Works Company, Ltd.—Organized with capital of Yen 500,000, quarter paid-up, for general iron and foundry work and manufacture of bolts, nuts and rivets. Office, 24 Kobosije, Shimonoseki. Managing Director, Tokujiro Nakamura.

Yogyu Gas and Electric Company.—Organized as a limited partnership for the manufacture of electric machines and tools. Office, 158 Toyasaki-machi, Nishinari-gun, Osaka-fu. Representative, Tetsusaburo Yogyu.

Rubber Goods Factory, Canton.—A factory for manufacturing rubber goods has recently been successfully organized in Honam, Canton. It is understood, says the *Canton Times*, that the manufactory is obtaining raw rubber from Kiung-chow and Ngaichow, in the island of Hainan, where rubber trees are growing successfully.

Kyowa Celluloid Company, Ltd.—Organized in Japan with a capital of Yen 50,000 for the manufacture of celluloid. Office, 2080 Kameyedo-machi, Tokyo-fu. Managing Director, Y. Wakai.

Tokyo Metal Works.—Organized as a partnership for general metal work and manufacture. Office, 238 Tsurumaki-cho, Ushigome-ku, Tokyo. Manager, K. Kitayoshi.

Kamitoku Iron Works.—Organized in Osaka as a partnership to engage in general foundry, machine work, and manufacture of machines and tools.

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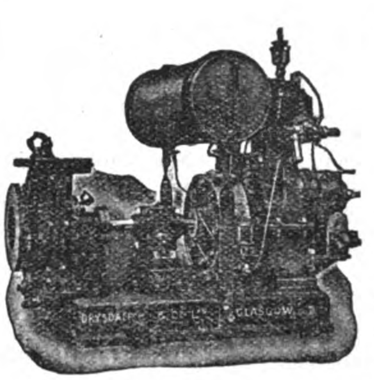

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Greases	Wood Preservatives

Additional Foreign Connections Desired.

Office, Kitanagai, Toyasaki-machi, Nishinari-gun, Osaka-fu. Representative, Ryutaro Sayama.

Karafuto Lumber Co., Ltd.—Organized in Tokyo with a capital of Yen 1,000,000, fully paid up, to engage in general lumber and saw-mill business. Office, 1 Itchome Yaisu-cho, Kojimachi-ku, Tokyo. Managing Director, Kyohei Kato.

Fuel Investigation Laboratory.—The fuel investigation and testing institute of the department of agriculture and commerce of Japan, has made a start in the appointment of its engineers and has secured the land to the extent of 12,000 *tsubo* at Kawaguchi-machi in Saitama prefecture, for the erection of its plant. This is estimated to cost Yen 1,000,000. This is expected to be completed by 1922. The results of all tests will be made public for the benefit of general industry.

Tea Machinery Factory.—The Tanaka Company was recently organized as a partnership for the manufacture and sale of tea machinery. Office, 2054 Katsumata, Kawasaki-machi, Shidzuoka Prefecture. Representative C. Nonaka.

Signalling Machines.—The partnership company, Morita Shoten, has been organized in Japan for the manufacture of signalling machines. Address, 27 Yegawa-cho, Kobe. Representative, Kamekichi Morita.

Kitahiro Iron Works.—Organized as a partnership for general machinery work. Office, 2491 Tokinogawa, Itobashi, Tokyo-fu. Manager, K. Hirase.

Nagasaki Meter Company, Ltd.—Organized with capital of Yen 25,000, half paid-up, for manufacture of meters. Office, 15 Take-cho, Shitaya-ku, Tokyo. Managing Director, T. Furuya.

Silk Filatures in China.—According to the statistics of the silk merchants guild, the number of filatures at different centres in China is as follows: Kiangsu Province: Shanghai, 78; Soochow, 3; Wusih, 11; Chenkiang, 2. Chekiang Province: Hangchow, 1; Shiou-shan, 1; Huchow, 1. Hupeh Province, 1; Hunan Province, 1; Anhwei Province, 1; Yunnan Province, 1. The total annual production from these filatures is 358,000 piculs, and, if no interruption occurs, the maximum is 400,000 piculs.

Proposed Dye Works, Japan.—The Nagoya cotton yarn association is considering a scheme to establish a dye works in that city.

Mannen Tile Manufacturing Co., Ltd.—Organized in Tokyo with a capital of Y.1,000,000, quarter paid up, for the manufacture of tiles. Office, 8 Honda-mura, Katsushika-gun, Tokyo-fu. Managing Director, Sashiro Ishii.

Paper Manufacturing and Material Co., Ltd.—Organized in Nagoya with a capital of Y.100,000, quarter paid up, to engage in the manufacture of paper and deal in paper stock. Office, 4 Shichome Miya-machi, Higashiku, Nagoya. Managing Director, M. Takagi.

Oriental Paper Manufacturing and Printing Co., Ltd.—Organized in Tokyo with a capital of Y.350,000 one quarter paid up, for manufacturing paper and general printing business. Office, 9 Nichome Nishi Ogawa-machi, Tokyo. Managing Director, Otozo Wakao.

Machinery Exhibition, Tokyo.—The Tokyo prefectural government is busy now preparing for the big exhibition of industrial machinery to be held next July, according to the *Jiji*. The present plans, for the carrying out of the preliminary preparations of which the administration is asking Y.1,000, calls for a building covering 15,000 *tsubo*. Uyeno Park seems to be the most suitable location, but even it does not offer as large an open space as is desired.

Ho Feng Cotton Mill (Ningpo) is reported to have made a net profit of $1,250,000, on a paid up capital of $600,000 at its inception, which has been during recent years increased to $1,800,000. This mill was established in 1906. It then had 12,500 spindles, and these were increased from time to time to 27,500.

New Tannery in China.—Y. S. Chen, son of Jan Kon-chen, Chief Justice of the Supreme Court of China, was in Chicago recently conferring with tanners and chemists on the tanning industry. He is a graduate of Michigan University, also of Columbia and has devoted most of his time and education to chemical research. He states that there is a good market for sole leather in China and the tannery which will be built at Hankow will be used largely for the manufacture of bottom stock.

New Spinning Machine Company, Japan.—The Oriental spinning machine company, organized last year, is the first of its kind to be established in Japan. The company has purchased the Toyo Iron Works, Limited, formerly engaged in the manufacture of parts of spinning machines and repairs of these machines, and has accomplished the process of manufacturing the whole set of spinning machines by improving and amplifying the manufacturing process conducted by the former establishment. The machine constructed by the new establishment is modelled after the German silk spinning machine known as Hartmann system machine. Compared with the German machine the manufacture of the company is by no means inferior in the result of operation and has an advantage over imported machine in respect of cheaper price. The company has already received orders from the Fuji Spinning Company and a few silk yarn reeling factories in Nagano and Shiga prefectures. The company has also succeeded in the manufacture of spindles.—Exchange.

New Cotton Mills, China.—Machinery is now being rapidly installed in the Pao Cheng Cotton Mills in Shanghai, the largest enterprise in China. It embraces cotton spinning, weaving and a waste mill.

The total cost of the enterprise will be close to $10,000,000 when completed, including land, machinery and building construction. The mill will include 100,000 spindles, 6,000 spindles for converting waste and 600 looms for weaving cloth. The daily output will be 100,000-lb. of cotton yarn. All of the equipment in the mill will be of American construction.

The Yu Foong Cotton Mill at Changchow in Honan, formally opened on June 13, has a power plant and picker rooms enough for 50,000 spindles and 1,200 looms. Five hundred k.w. power plant and 10,000 spindles are now running; 40,000 more spindles and 200 looms are on order, the machinery being all American.

Non-Tearable Paper.—The Japanese government recently took out a patent for a liquid which makes paper absolutely non-tearable, says *La Journee Industrielle*. It proposes to use the new preparation in the manufacture of paper for bank notes, military cards, stamps and umbrellas.

New Chinese Industrial Enterprises.—The ministry of agriculture and commerce reports the recent registery of the following new enterprises:—

Cotton mill : 16	Capitalization :	$ 6,673,000
Mining Cos. : 12	,,	9,492,785
Electrical Cos. : 26	,,	3,123,785
Transportation Cos. : 18	Capitalization :	$ 6,866,000
Trading Cos. : 15	,,	13,373,000
Agricultural & Forestry Cos. : 16	,,	21,721,300
Manufactories : 53	,,	21,721,300
Fishery Cos. : 3	,,	1,055,000
Other enterprises : 8	,,	2,463,000

Looms from America but German Power.—The eighth branch factory of the Dah Sung Cotton Mill, of Nantungchow, is to be at Sze-yang-pah on the southern bank of the Grand Canal. Building will begin at once. Six-hundred power looms have been ordered from America and are expected to be delivered in July. German motors will be used.

Javanese Oil Factories Amalgamation.—The Insulinde Oil Factory, the United Oil Mills and Van Dongen Oil Factory are about to amalgamate. All three companies are established in Java.

FISHERIES

Sea-Bears Concession.—Kuhara & Co. have proposed to the Fish and Fur Industries Council of Vladivostok an agreement for the exploitation of the Commander Islands, the Behring and Medny (copper) islands, the abode of sea-bears, beavers, and white and blue foxes. At different times these islands were leased to various commercial companies, foreign and Russian, but since 1917 they have remained untenanted. Kuhara & Co. offer the following terms:—(1) The lease is to be made for a term of ten years from 1921 to 1931. (2) The exploitation of the islands is to be carried on by Kuhara & Co. in compliance with conditions to be worked out by both parties, and with the existing laws and regulations of international guarding of sea-bears and beavers, under the control of a person, authorized by the Russian authorities and furnished with due instructions, the contents of which are to correspond to the terms of agreement. (3) The company is to be granted the right of complete exploitation of the islands, *i.e.*, killing sea-bears, beavers, foxes, and likewise the right of fishing and catching sea-animals along the shores of both islands. (4) The time, place, method employed, and number of animals to be killed, is to be determined by a special instruction. (5) The company is to make payment to the government for each skin obtained on the islands and offers to pay 14 gold roubles apiece per sea-bear; 450 gold roubles per each beaver skin, 46 gold roubles per skin of blue fox, and 12 gold roubles per skin of white fox. This payment includes the remuneration to the inhabitants for carrying on the industry. The company is willing to advance payment for a year the amount to be calculated according to date of the number of skins obtained during the season. The company is also willing to differentiate the payment into payment of rent, and payment to the inhabitants for carrying the industry. (6) The sea-bear, beaver, and fox industry is to be carried on by help of local residents. The company is allowed to keep on the islands an indispensable force of its own employees (clerks). (7) The company assumes the obligation of establishing fox burseries and scientific observation work. (8) The company undertakes the complete business of supplying the population of the islands with everything necessary and to sell the supplies at the prices prevailing on the markets, where they were purchased, plus the cost of transportation, and commercial expenditures, this, however, is not to exceed 15 per cent. of the market prices.

AIRCRAFT

Philippine Aerial Service.—An air mail and passenger service between Manila and other ports

in the Philippines is being organized. The war department announces that it has purchased five seaplanes from the navy department and that the flying personnel will be formed of 30 officers of the Philippine National Guard.

Sino-America Aviation Co.?—A Sino-America Aviation Co. is being promoted in Shanghai for "carrying cargo and mail between Shanghai and U.S.A. and to other parts of the world later on" by a Mr. Y. K. Shen. The *Shun Pao* says: "The capital is being fixed at $100,000, U.S., to be divided into one thousand shares of a hundred dollars each, with $30,000 gold to be paid up at the beginning. This company will be registered with the American government. At present, two members of the General Chamber of Commerce of Shanghai have invested in this enterprise. The Board of Directors of the company will consist of Chinese and Americans in equal number."

Shanghai-Peking Line.—The aviation department, Peking, reports that the survey for the Shanghai-Peking line, China's first aviation service, has been completed. Particulars: Length: 908 miles. Two main stations—Shanghai and Peking; four sub-stations—Tientsin, Tsinan, Hsuchow and Nanking; and eight emergency stations. Ground costs $165,000.

ROADS

Kobe Road Program.—Kobe will soon start to improve its roads at a cost of approximately Y.14,819,029, of which sum the central government pledges a subsidy of one-third. The work will be spread over 16 years, beginning with the current fiscal year.

The subsidy from the national coffer amounts to about Y.4,707,675 of which Y.50,000 and Y.70,000 will be defrayed in 1920 and 1921 each, Y.150,000 in 1922, and from 1923 to 1930, Y.350,000 will be given yearly, from 1931 to 1934, Y.400,000 annually and Y.267,675 will be disbursed in 1935, in which year all the works are to be completed.

Shanghai-Minhong Motor Road.—A motor road is being surveyed from Shanghai to Minhong, a town some fifteen miles to the west of Shanghai.

Shanghai-Liuhoo Road.—Survey for an automobile road between Shanghai and Liuhoo, a town some twenty-four miles to the north-west of Shanghai, is in progress. The cost is estimated at about $170,000.

Paoshan Roads.—Two main roads are proposed to be built (1) from the northern extremity of Shanghai to Lutien, and (2) from Woosung to Kwuanfoh.

Road Construction at Canton.—The government of Kwangtung has formed a Public Highway Commission with Chen Tet-sen as the chief. Among the proposals suggested are (1) public organizations, private companies, or individuals in the several districts may undertake the construction of the proposed highway; (2) agreements will be entered into by the government and the party interested in the building regarding the responsibility and the privilege to be enjoyed and carried by the people and the contractors concerned; (3) that the government shall not interfere with the operation of the road building contractor, individual or company; (4) until the charter expires, the party having successfully built the highway shall be permitted to enjoy the income and other privileges attached to the road and other benefits to be agreed upon; (5) the government will reclaim the highway at the termination of the agreement so that, within a stated time, the Public Highway Department will control all public roads and make future improvement on them. There are now 16 miles of the city roads open to traffic, while some 30 miles are still under construction. The roads are either 70, 80, 100, or 150-ft. wide, all depending upon the importance of the thoroughfare.

Along the side-walks of the roads of but 70-ft., trees will be planted, and no electric cars will be permitted to run on them; they will be for the rickshas and other trackless vehicles only.

No trees will be planted on the side-walks along streets of 80-ft. wide, but porches may be built over them. These streets will admit of a tramway.

Trees will be planted in the middle of the streets 100-ft. wide and over the side-walks of these roads porches may be erected by the owners of residence abutting on the road.

There w'll be a motor-road from the Canton-Kowloon Railway Station to Sha-ho, with two branches, one running to the White Cloud Mountain, the other to Yin-tong. On the sides and in the middle of this road, trees will be planted.

Wuan-Hantan Road, Honan.—Plans for the projected Wuan-Hantan road have been taking shape and preliminary work has gone on apace. About five thousand men will be employed.

MOTORS

Autos for Honan.—The military governor of Honan proposes to build a road from the north gate of Kaifengfu, capital of Honan, to the Yellow River, a distance of about fifteen miles. From that point a good cart road follows the river to Tsinanfu, capital of Shantung. The governor proposes to establish a motor bus line between the capitals.

Nippon Shoji Automobile Company, Ltd.—Organized with capital of Y.1,000,000, quarter paid up, for the manufacture and sale of automobiles. Office, 6 Itchome Uchisaiwai-cho, Kojimachi-ku, Tokyo. Managing Director, N. Kawasaki.

Hoki Automobile Company, Ltd.—Organized with capital of Y.30,000, half paid up, to engage in general garage business. Office, Hoshoji-mura, Hoki prefecture. Managing Director, K. Nakira.

Chinkai and Chiusho Automobile Company in Korea.—This firm has received permission to extend their services to Shasen on the Keiwado line.

Motor-Cars in Java.—The special requirements of a car for the Dutch East India market are an adequate cooling system, as the climate is, we all know it too well, "tropical"; the engine must be sufficiently powerful and flexible to take easily the numerous hills, and to cover long distances; a stout transmission system and large and strong springs are most important points for manufacturers. Special care should be taken in packing cars for Java, as several cases have been reported where parts have been stolen. Many consignees appear to leave their freight in the dock warehouses until they are ready to take delivery. There are over 12,000 cars in use in these territories, and almost all imported since 1915 have been of American manufacture. Before that, French and Italian cars predominated, and already there are signs that the manufacturers in these two countries are making strenuous efforts to regain the market, and no doubt they will, as big profits were made in the past three years in Java. (*Java Motor Age.*)

GOVERNMENT FINANCE

Japanese Budget, 1921-22.—The Japanese budget for the fiscal year of 1921-1922 shows the following comparison with the budget for the fiscal year of 1920-21:—

Department	For 1921-1922	For 1920-1921	Increase	Decrease
Ordinary Expenditure:				
Civil List .	Y.4,500.000	Y.4,500.000	—	—
Foreign Affairs .	18,488,311	10,847.147	Y 7,641.164	—
Home Affairs . .	40,860.512	34,778.907	6,081.605	—
Finances .	223,146.614	192,774.410	30,372.204	—
Army . .	183,290.831	155,942 414	27,348.417	—
Navy . .	144,811.078	109,063.369	35,747.709	—
Justice .	27,242.184	22,158 678	5,083.506	—
Education	33,938.167	27,675.764	6,262 403	—
Agriculture & Commerce .	19,377,811	15,311.651	4,066,160	—
Communication .	207,285.315	152,105.419	55,179.896	—
Total. .	902,94..823	725,157,759	177,783.064	—
Extraordinary Expenditure:				
Foreign Office .	3,130,574	4,149.542	—	1,018.968
Home Office .	76,426.341	68,522.139	7,904.202	—
Finances .	35,271.551	131,755.413	—	96,483.862
Army . .	79,855.871	57,480 725	22,373.146	—
Navy . .	353,823.000	244,294.516	109,531.484	—
Justice .	2,426.472	1,936 398	490.074	—
Education	20,672.879	15,882.654	4,790,225	—
Agriculture & Commerce .	31,303.978	27,340.143	3,963.835	—
Communications .	56,690.308	58,836.019	—	2,145.711
Total. .	659,601.974	610,197.549	49,404.425	—
Grand Total.	1,562,542.797	1,335.355.308	227,187.489	—

Japan Settles the British Loan.—On November 25, the government convened a meeting of the syndicate bankers at the Bank of Japan, to arrange terms for the issue of Exchequer Bonds amounting to Y.50,000,000. The following bankers were present at the conference:—

Tokyo syndicate: Mr. Kajiwara (Yokohama Specie Bank), Mr. Minobe (Bank of Chosen), Mr. Hijikata (Industrial Bank), Mr. Morinaga (Bank of Taiwan), Mr. Sasaki (Daiichi Ginko), Mr. Matsukata (Jugo Ginko), Mr. Ikeda (Daihyaku Ginko), Mr. Z. Yasuda (Daisan Ginko), Mr. Ikeda (Mitsui Ginko), Mr. Kushida (Mitsubishi Ginko), Mr. Yasuda (Yasuda Ginko), and Mr. Nonomura (Kawasaki Ginko).

Osaka syndicate: Mr. Koyama (Sanjushi Ginko), Mr. Yukawa (Sumitomo Ginko), Mr. Kato (Konoike Ginko), Mr. Banno (Yamaguchi Ginko), Mr. Yoshii (Kashima Ginko), and Mr. Ikeda (Omi Ginko).

Nagoya syndicate: Mr. Tsunekawa (Nagoya Ginko), Mr. Omiwa (Meiji Ginko), and Mr. Tashima (Aichi Ginko).

The object of the issue was to absorb the money that the British government will pay in redeeming its Exchequer Bonds floated some time ago in Japan, amounting to Y.50,000,000, and falling due on January 15 next. Financial stringency is generally fully felt in Japan, but in the banks money is very abundant at present, since they have been refusing to extend credit for some months past. The government proposal is therefore considered by the bankers as a timely undertaking.

The issue was agreed upon on the following terms:—

Interest at five per cent. per annum.

Issued at Y.93.50 per Y.100.

The British government exechequer bonds, falling due on January 15 next, are to be accepted in payment at face value.

To be redeemed on March 1, 1925.

The said British bonds are almost all in the hands of banks, and so the issue will result simply in changing the British bonds into Japanese bonds, from the financiers' point of view. The British bonds will then cease to exist. Specie, it is reported, is already arriving there from the British government for the repayment.

New Chinese Rolling Stock Loan.—The Chinese

Bankers' Syndicate proposes to finance the government with $6 million for the specific purpose of purchasing rolling stock, the shortage of which has seriously interfered with the transportation of merchandise. It is proposed that the ministry of communications will issue loan bonds to the value of $6 million. The object of the loan will be stated on the bonds, and the Bank of Communications and the Bank of China will recognize the loan as an industrial loan which is to be subject to the supervision of the financiers in regard to its expenditure.

Japanese Issue Oversubscribed?—The Bank of Japan announces that the subscriptions to the new 5 per cent. exchequer notes, amounted to Y.78,010,000, while the total value of the issue is Y.50,000,000.

Of the total subscriptions, Y.45,300,000 is to be paid in cash, while Y.32,690,000 is to be paid in the maturing British treasury notes.

China May Issue Domestic Bonds.—In order to secure funds for the relief of the famine sufferers in North China the government is contemplating a domestic bond issue. The loan will be floated under the supervision of the ministries of finance, interior, and the famine relief department, and will be secured by the imposition of a ten per cent. tax on the provincial revenues. Each province is to be ordered to buy these bonds in proportion to the amount of revenue to be collected from the imposition of the extra tax in that province which will be deposited with government banks for the payment of capital and interest due on the bonds. The imposition of this extra tax will be enforced for one year and the loan will be entirely refunded within three years from the date of issue.

Bank to Pay Troops.—Having no other means to pay the troops and prevent mutiny, the Hunan government is reported as starting a commercial bank for paying the troops upon the issuance of bank notes to the value of $3,000,000 silver.

No More Foreign Loans.—The Peking government announces that from January 1, 1921, it will not contract any more non-productive foreign loans. Indispensable political and military expenses will be provided by a Chinese financial syndicate, in order to avoid supervision of expenditures by foreigners. Thus goes the declaration.

Hard up in Canton.—Being in need of urgent funds to meet the necssary military expenses, General Chen Chiun-ming has just received a loan of $6,000 from the Kwangtung Electrical Supply Co. and another loan of $30,000 from the Canton Water Supply Company.

Hukuang Bonds Not Outlawed.—Dr. Y. W. Chan, Hongkong banker, is in New York, enroute from the Brussels' conference, speaking to a representative of *The Wall Street Journal* on the position of Chinese government Hukuang Railway five per cent. bonds, said :—

"There seems to be a misunderstanding on the part of America regarding China's attitude on the Hukuang bonds. China in repudiating debts to Germany only followed the example of the United States, Great Britain and France. China has not outlawed the Hukuang bonds; she has only outlawed those bonds held and owned by German citizens. She has asked the present holders to prove that they did not buy these outlawed bonds.

"In pursuing this course, China is only asking what the United States, Great Britain and France have required concerning enemy property. China is following your example. It is not fair to her to let American or British bankers buy up these outlawed bonds for thirty or forty cents on the dollar and then compel her to redeem them at par. We cannot believe that the consortium will insist upon China doing so as a condition before making any other loans or advances to the Chinese government."

Provincial Bank of Kwangtung.—The Provincial Bank of Kwangtung, at Canton, resumed its business on December 6. Managing Director Cheng said that there are at present something like $250,000 worth of banknotes of the bank outstanding, but most of them, except $30,000 or $40,000, are now in possession of the previous managing director, Mr. Tsan Hai-chau. Until the number and worth of the banknotes lost during the recent disturbance are ascertained, their redemption will be withheld. The Canton government has already paid in $1,000,000 of its subscribed stock, and the government will at least deposit $3,000,000 monthly at the Bank. The Bank will not issue any banknote without security for its redemption on presentation. Mr. Cheng believes that the Bank will be in full running order and able to help the government to improve its finance in three months.

Chinese Postal Surplus.—The minister of communications proposes that 30 per cent. of the postal surplus should be set aside as an annual appropriation for the development of communications.

Small Loan for Chinese Education.—With the interest due from the Russo-Asiatic Bank shares as security, a $1,000,000 loan is being negotiated for the ministry of education. The loan is to be paid in three instalments.

China's Income Tax Postponed.—The Chinese ministry of finance announces that the imposition of income tax has been postponed for three months or until April 1 (!).

New Domestic Loan?—A loan of five million yuan was contracted during the latter part of December between the Peking ministry of finance and a banking group consisting of 7 Chinese banks; interest, seven per cent., secured on the revenues of Peking-Hankow, Peking-Suiyuan, Tientsin-Pukow and Shanghai-Nanking Railways; for a period of five years; to be repaid one-fourth annually from the second year and only interest to be paid in the first year.—*Sin Wan Pao.*

No Japanese Loan for Canton.—The Peking government, on receiving a report that the Japanese government had given a loan of $3,000,000 silver to Dr. Sun Yat-sen, Mr. Tang Shao-yi and other Southern leaders, enabling them to reorganize the Canton Military government, filed a protest with the Japanese authorities through Mr. Hu Wei-teh, Chinese minister to Tokyo. The Peking government, later, received a report from Mr. Hu Wei-teh in which the Japanese minister for foreign affairs assures him that Japan had never favored the South and had not concluded any military loan, as was agreed to by the Powers some time ago.

The Chinese Customs Surtax.—The diplomatic corps at Peking has decided that the Chinese customs surtax ought to follow the precedent of the last tariff revision and come into operation two months after the date on which official notice of it was given, becoming effective on February 16, instead of January 16, as was proposed by the Chinese government.

BANKS

Sir John Jordan Director of Chartered Bank.—The Right Hon. Sir John Jordan, P.C., K.C.I.E., K.C.B., K.C.M.G., until last year British minister at

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Peking, has joined the court of directors of the Chartered Bank of India, Australia and China.

High Tribute to Mr. N. J. Stabb.—Mr. N. J. Stabb, who has retired from the chief managership of the Hongkong and Shanghai Banking Corporation, was banqueted by the Chinese merchants and bankers of Hongkong on the eve of his departure for home. Sir Robert Hotung, former chief compradore for Jardine, Matheson & Co., presided and paid a high tribute to the fine record made in China by this deservedly popular British banker. Mr. A. G. Stephen, who is well and most favorably known in Chinese financial circles, has succeeded Mr. Stabb as chief manager.

New Yokohama Bank.—Messrs. Hara, Watanabe, Wakao, Isaka, and other well-known business men of Yokohama have decided to establish a bank, to be called the Koshin Ginko, with a capital of Y.1,000,000, with the object of adjusting the affairs of the 74th Bank of the Mogi interests.

New Chinese Bank in Manila.—Articles of incorporation for a new Chinese banking institution, conducting general banking business on strictly American methods, have been filed in Manila.

New Bank, Korea.—As the Hakwroken Steamship Company are now running steamers between Japan and Northern Korea, the Toyama Bank has commenced business in Northern Korea as the Korean Colony Bank. The Juni Bank has decided to open a specie bank at Vladivostok, and the Chosen Bank is also to open a branch at Vladivostok.

COMMERCIAL FINANCE

Chitose Fire and Marine Insurance Co., Ltd.—Organized with a capital of Y.5,000,000, quarter paid up, to engage in insurance business in Japan and foreign countries. Office, 12 Imono-cho, Nihonbashi-ku, Tokyo. Managing Director, I. Kadono.

New Japan Fire and Marine Insurance Co., Ltd.—Organized in Tokyo with a capital of Y.5,000,000, quarter paid up, to underwrite fire and marine insurance in Japan and foreign countries. Office, 3 Itchome Yuraku-cho, Kojimachi-ku, Tokyo. Managing Director, Y. Kanamitsu.

Plan to Strengthen Fuji Steel Company.—A plan is on foot to reorganize the Fuji Steel Company, operating one of the largest steel plants in Japan. According to the new scheme, Mr. S. Asano, president of the T.K.K., will be the head of the new company and Mr. Hideo Shibusawa will represent the Shibusawa interests. The new organization will be capitalized at Y.5,000,000 and the Yasuda interests will finance the project. Before the present financial and industrial depression, the Fuji Company was one of the most prosperous concerns in Japan. It was, however, after the signing of the armistice compelled to close its doors because of the slump and a disagreement among the members of the board of directors.

The East Asia Industrial Company.—The East Asia Industrial Company (Toa Kogyo Kabushiki Kaisha) was established in 1909 for the purpose of developing economic enterprises in China. In spite of many adverse factors, such as the violent anti-Japanese agitation, the civil war in China, the sudden depreciation of silver, and the financial upheavals both in China and Japan, the company is very prosperous.

Its business for the past half-year has been very satisfactory, as indicated by the following extracts from its report to the shareholders :—

(1) The conclusion of a fifteen million yen loan with the ministry of communications, to be employed in the improvement and construction of the telegraph system in China.

(2) The negotiations for a loan with a certain firm in China which is to be used in establishing a beet sugar factory.

(3) The electric concern at Hankow to which the Company supplied capital and technical aid, has achieved such a fine success that it has proposed to the Company the redemption of loans previous to the expiration of the term.

(4) Various investments in the several enterprises in Shanghai and other centres of China. The investments made by the Company in China total no less than seventeen million yen.

The Company is capitalized at twenty million yen of which seven and a quarter million yen has been subscribed to. The management consists of Mr. Kentaro Arai, President; Mr. Shimpei Hiraiwa, Managing Director; Messrs. Jukuro Kadono, Chozo Koike, Masajiro Arase, Eijiro Ono, Teijo Eguchi, and Masaya Suzuki, Directors; and Messrs. Shintaro Ohashi, Kichibei Murai, Matazo Kita, and Kimiye Furuichi, Auditors.

Brunner, Mond Reorganizes.—A private Company called Brunner, Mond & Co. (China), Ltd. has recently been registered at Shanghai as a Company under the Hongkong Companies Ordinance of 1911. The Company has been formed for the purpose of taking over as a going concern the assets and good will of the business hitherto carried on in the Republic of China and adjoining territories by Brunner, Mond & Co., Ltd., Northwich, England. The nominal capital of the Company is Shanghai $2,000,000 divided into 20,000 fully paid up shares of $100.00 each.

Nantungchow Industrial Loan.—Mr. T. A. Chang and Mr. Chang Chien plan to issue local loan bonds to the amount of two million dollars to provide capital for promoting different industrial enterprises at Nantungchow, such as electricity works, oil mills, soap factories, paper manufactories, automobile roads, a long-distance telephone system. Approval has been given by the self-government association of Nantungchow. The face values of the bonds are $1,000, $100, $10, and $5, with 8 per cent. of interest. The principal will be repaid from the fourth year after issuance by drawing. Subscriptions open January 1.

SHIPBUILDING

Mitsubishi Launching.—The s.s. *Masekka Maru*, 3,900 tons, built to the order of the Nanyo Yusen Kaisha, was launched at the Mitsubishi yards, November 27.

New Keel Laid, Uchida Yard, Japan.—The Uchida Dockyard at Yokohama is laying the keel for the construction of the new oil-supply steamer *Kurosaki* ordered for the Japanese navy.

New Japanese Steamer.—The *Takaoka Maru*, of 11,000 tons, was launched on November 21 at the Yokohama Dockyard to the order of the Nippon Yusen Kaisha.

T.K.K. Oil Vessel.—The Toyo Kisen Kaisha has reconstructed the *Kiyo Maru* into a tank vessel for the purpose of carrying petroleum from America. In view of the increasing demand for petroleum the company has decided to build two tank vessels each of 20,000 tons capacity, and import oil from a certain country other than America. But the company is confronted with the difficulty of obtaining funds required for the construction of new vessels and also with a lack of direct or indirect financial aid for the maintenance of the new service.

A Yangtze River Steamer Launched at Taikoo Docks.—On November 29, the *Whangpu*, having a gross tonnage of 3,200 tons, was successfully launched at the Taikoo Dockyard in Hongkong. The owners of the new vessel are the China Navigation Co., one of the "W" class of steamers intended for trade between Shanghai and Hankow. The others of this class are the *Woosung* and *Woochang*. The particulars of the *Whangpu* are as follows : Length between perpendiculars, 320 feet; breadth moulded, 46 feet; depth moulded, 14 feet; gross tonnage, 3,204; nett tonnage, 1,975; dead weight, 2,390 tons; draught; 13 feet; speed 12 knots. Her engines are of 1,700 horse-power. She is built of finest quality Sieman's Martin steel, with every modern appliance and convenience for navigation, and is fitted for first class Chinese passengers. Included in her equipment is a gear for lifting 30 tons weight. Special attention has been paid to her officers' quarters, which are large and comfortably furnished, on the upper deck. The captain's quarters consist of a suite of rooms with bath on the lower bridge deck. The machinery consists of two sets of triple-expansion engines, capable of developing 1,600 indicated horse power, steam being supplied by two large cylindrical boilers working under forced draught on the hot-air, closed-ashpit system, superheated steam being used.

SHIPPING

Chinese Navigation Co.—Mr. Chang Chien recently sent Mr. W. Liu and Mr. S. L. Hsu to Peking to propose founding a navigation company, which can be formally opened in six months if officers are now sent to Europe to order vessels. Mr. Yih Kung-cho, minister of communications, approved this proposal and will extend to the company the new Navigation Regulations. It is reported that officials have been sent to Europe to order vessels by Hon. Chang Chien, and capital secured for this enterprise.

More Ships for C. M. N. Co.—A resolution to purchase three ocean steamers to ply between Pengpu, Shanghai, Amoy, Swatow, Hongkong and Canton was introduced at a recent meeting of the directors of the China Merchants' Steam Navigation Co. recently at Shanghai. The reason why the China Merchants were unable to compete with foreign shipping companies was due to the lack of sea-going vessels. It was urged that Jardine's had four such vessels, while the China Navigation Company had five. A loan was suggested for the construction of the big steamers if necessary.

Los Angeles-China Line.—Establishment of a $15,000,000 steamship company, to be known as the Los Angeles-China Line, and to be financed by Los Angeles and Chinese capital, was promised by Fred L. Baker, president of the Los Angeles Pacific Navigation and Los Angeles Steamship companies, at a banquet given by the Chinese Chamber of Commerce to the official of the concerns on September 17.

Shipping on Oriental Routes.—The following Tokyo statistics show the comparative strength of Japanese and other shipping in Oriental waters :

Routes	July 1914 Tons	Sept. 1920 Tons
Japanese	109,940	230,560
European—Foreign	656,153	614,809
Japanese	121,353	174,482
North-American (western route)		
Foreign	230,568	446,597
Japanese	—	183,620

Routes	July 1914 Tons	Sept. 1920 Tons
North-American (eastern route)		
Foreign	—	321,467
Japanese	25,544	81,808
South American—Foreign ...	—	—
Japanese	18,109	39,898
Australian—Foreign	19,829	28,417
Japanese	78,771	55,031
Indian—Foreign	138,516	129,668
Japanese	15,159	55,427
South Sea—Foreign	—	40,301

Japanese Steamers on the World's Lines.—Returns of the Japanese communications office show that in October, 1920 there were 750 Japanese steel boats of 1,000 tons or over with the aggregate gross tonnage of 2,618,924 tons run on the world's lines, as may be seen from the following details :—

Line.	Steamers. Number	Gross Tonnage.
Near Sea	202	422,583
Vladivostok	16	127,670
Korean	22	129,075
North China	66	136,562
Middle China	35	75,026
Formosan	17	54,535
South China	19	43,559
Yangtsze	12	30,345
Oceanic Island		
Javanese	22	63,279
Straits Settlements	20	54,988
Indian	40	155,545
Australian	27	104,787
South African	6	120,343
European	106	587,932
North American (East Coast) ...	35	214,439
Central American	3	17,568
South American (East Coast) ...	5	82,838
South American (West Coast) ...	3	24,863
North America	24	205,510
Hired by Foreigners	26	105,595
In Docks	27	71,443
Stranded	3	5,037

Japanese Cargo-Boats.—An investigation made by the Shipping Department of Messrs. Mitsui & Co. gives the total number of Japanese cargo-boats run on the world's lines on November 9 as 473 in number and 2,289,101 tons in tonnage, details of which may be seen from the following table :—

Line.	Steamers. Number	Gross Tonnage.
European	74	523,050
Mediterranean	13	84,425
South American	5	40,572
South African	6	43,270
Japanese-North American-Pacific	8	65,568
North American-Atlantic ...	20	147,190
Australian	30	157,205
Javanese	20	97,621
South Sea-Indian-South Chinese Sea	72	430,164
Coasting	186	482,960
Chartered	6	20,973
Owned by the Government Iron Works	2	9,830
In Docks	14	58,838
Chartered by the Government...	7	26,763
Missing	1	5,750
Tied Up	6	24,822
Stranded	3	70,100
Total	473	2,289,101

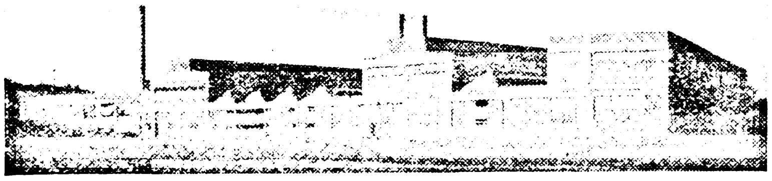
N.Y.K. Business for Last Term.—The business receipts of the Nippon Yusen Kaisha for the last half-year term ending September 30 resulted in a decrease of about 46 per. cent., or Y.7,100,000, the total amount of the gains for the term being Y.9,380,000 against Y.16,990,000 of the previous term.

Below are the accounts for last term and for the preceding term :

	Last Term (Apr.-Sept./20)	Previous Term (Oct.-Mar./20)
	(Figures in Y.1,000)	
Gross receipts ...	...71,385	82,162
Gross disbursement	...59,064	62,744
Profit	...12,320	19,418
Vessels depreciation fund	1,540	1,275
Vessels insurance ...	972	784
Vessels repair fund ...	363	309
Building depreciation fund	55	52
Net gain for the term ...	9,388	16,996
Brought over from previous account ...	3,044	3,061
Total	...12,433	20,058
To legal reserve... ...	470	850

Sino-Belgian Navigation Company.—Mr. Chaug Chien, former minister of the Tuan cabinet, with the co-operation of his friends and others, have signed an agreement with some Belgian capitalists from Antwerp for the formation of a Chinese-Belgian steamship company to run steamers between Shanghai, Antwerp, Rotterdam, Hamburg. Mr. Liu Chen is proceeding to Peking to place this proposal before the government for approval and support and it is hoped that the Sino-Belgian steamship navigation company will be organized next spring with a fleet of four ocean-going steamers which are in course of construction in Europe.—Chinese report.

THE WELL EQUIPPED SHOP DOES GOOD WORK.



General View of the Betts Machine Company's Plant.

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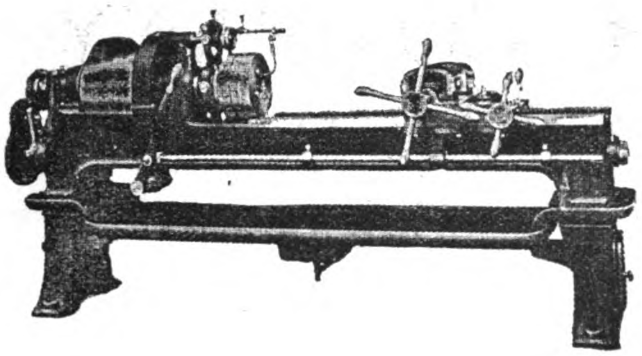

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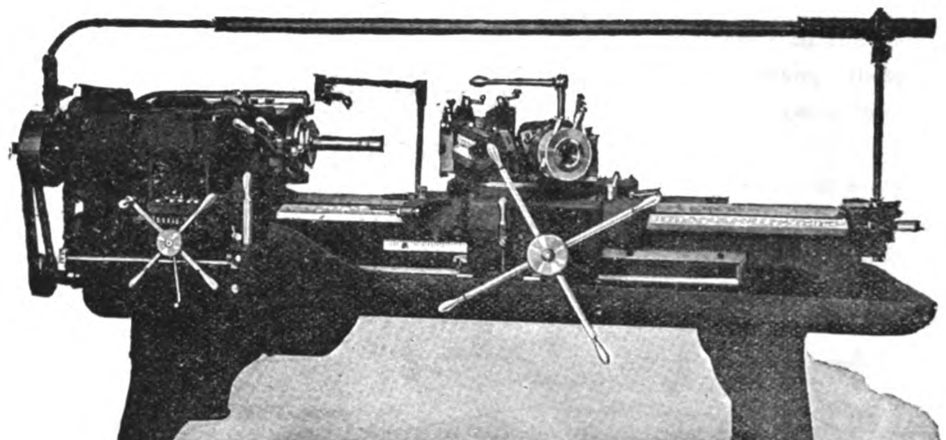

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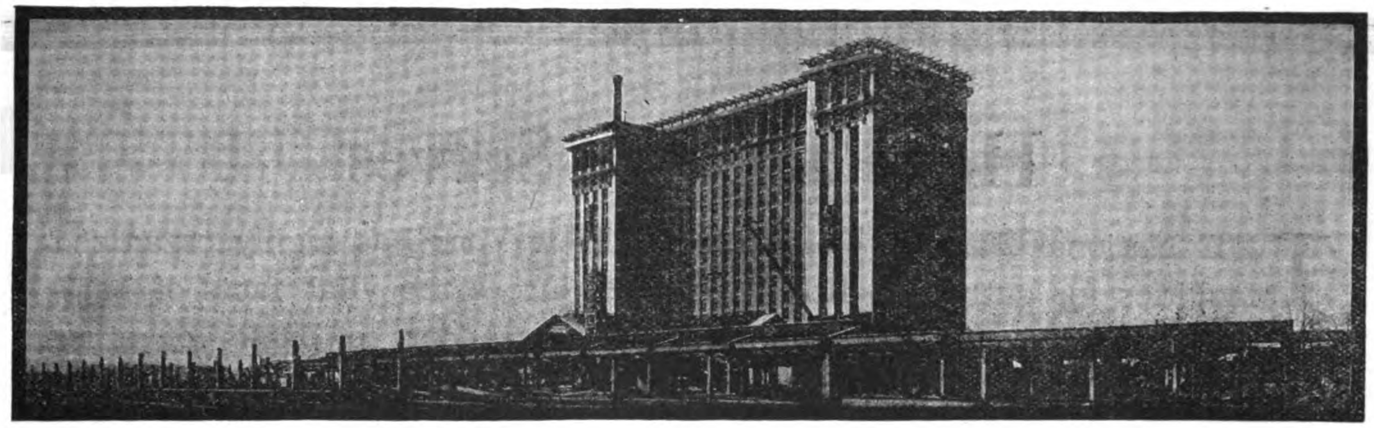

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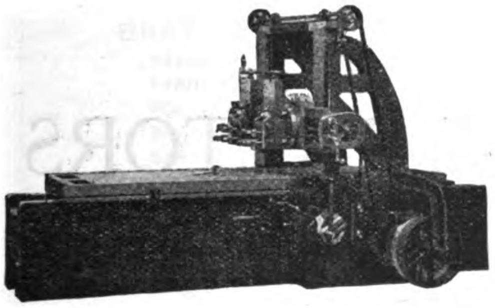

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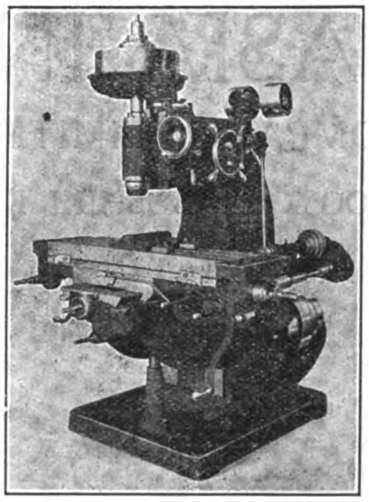

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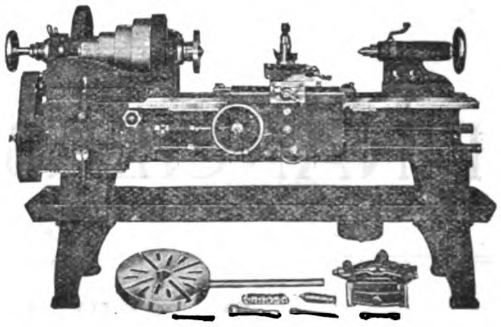

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Special facilities are available for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

Banque Industrielle de Chine

CAPITAL AUTHORIZED - - - - - - -	Frs. 250,000,000
CAPITAL SUBSCRIBED - - - - - - -	„ 150,000,000
CAPITAL PAID-UP - - - - - - - -	„ 75,000,000
RESERVES - - - - - - - - - - -	„ 40,000,000

One-third of the Capital, i.e., Francs 50,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese Republic on the 11th January, 1913.

***President*: ANDRE BERTHELOT**

***General Manager*: A. J. PERNOTTE**

HEAD OFFICE: 74 RUE SAINT LAZARE, PARIS.

Branches:

ANTWERP
BATAVIA
BORDEAUX
CANTON
DUNQUERQUE
FOOCHOW
HAIPHONG
HANKOW
HANOI
HONGKONG
LE HAVRE
LONDON
LYONS
MARSEILLES
MUKDEN
NEW YORK
PEKING
PNOM PENH
ROTTERDAM
SAIGON
SHANGHAI
SINGAPORE
SWATOW
TIENTSIN
TSINANFU
VLADIVOSTOCK
YOKOHAMA
YUNNANFU

BANKERS:

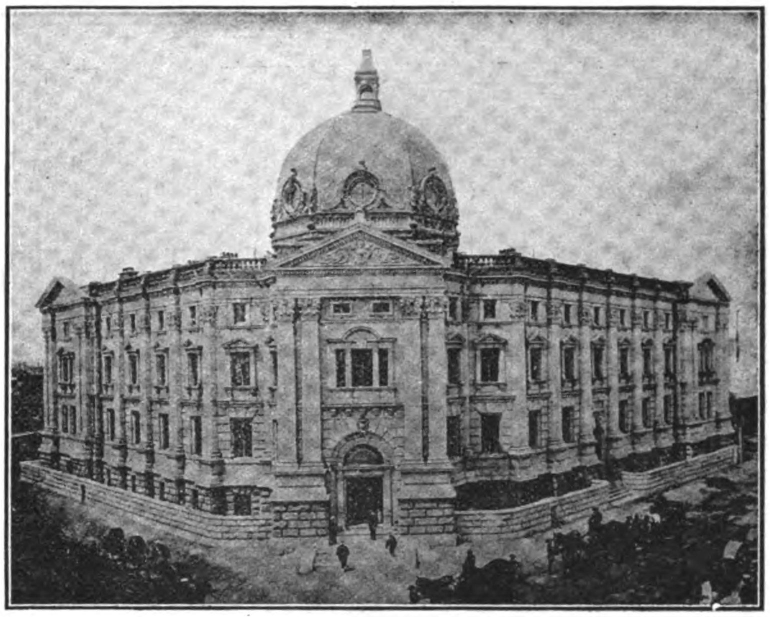
IN LONDON : The London Joint City and Midland Bank, Ltd., London.
IN FRANCE : Societe Generale pour favoriser le Developpement du Commerce & de l'Industrie en France.
IN ITALY : Banca Commerciale Italiana. Credito Italiano.

TAELS, DOLLARS, GOLD ACCOUNTS

Interest allowed on current accounts in Gold or local currency.
Savings account and fixed deposits. Terms on application.
Every description of Banking and Exchange business transacted.

B. ADAM, *Manager.*

1 French Bund, Shanghai.



HEAD OFFICE, YOKOHAMA

Capital Subscribed: Yen 100,000,000
Capital Paid-Up: Yen 99,737,450
Reserve Fund: Yen 50,000,000

CORRESPONDENTS AT ALL THE CHIEF COMMERCIAL CITIES IN THE WORLD

The Yokohama Specie Bank, Ltd.

DIRECTORS:

President: NAKAJI KAJIWARA, Esq.
Vice-President: SHIMAKICHI SUZUKI, Esq.
NAGATANE SOMA, Esq.
YUKI YAMAKAWA, Esq.
MASNOSKE ODAGIRI, Esq.
BARON KOYATA IWASAKI
KONOJO TATSUMI, Esq.
FUKUSABURO WATANABE, Esq.
IWAO MATSUKATA, Esq.
MORINOSUKE MITSUI, Esq.
BARON KAISAKU MORIMURA
REITARO ICHINOMIYA, Esq.
KENJI KODAMA, Esq.
KIMPEI TAKKEUCHI, Esq.
TARO HODSUMI, Esq.

BRANCHES:

Batavia, Bombay, Buenos Aires, Calcutta, Changchun, Dairen, Hamburg, Fengtien, Hankow, Harbin, Hongkong, Honolulu, Kaiyuang, Kobe, London, Los Angeles (*sub-office of San Francisco Branch*), Lyons, Manila, Nagasaki, Newchwang, New York, Osaka, Peking, Rangoon, Rio de Janeiro, Saigon, San Francisco, Seattle, Shanghai, Shimonoseki, Singapore, Soerabaya, Sydney, Tientsin, Tokio, Tsingtau, Tsinanfu, Vladivostock

Correspondents at all the Chief Commercial Cities in the World.

Shanghai Office: 31 THE BUND.

M. SHUTO, *Manager*.

GENERAL BALANCE, 30th JUNE, 1920

LIABILITIES

	Yen
Capital	100,000,000.00
Reserve Fund	44,000,000.00
Reserve for Doubtful Debts	4,534,015.78
Notes in Circulation	6,714,987.40
Deposits (Current, Fixed, etc.)	563,924,345.04
Bills Payable, Bills Rediscounted, Acceptances and other Sums due by the Bank	682,441,454.25
Dividends Unclaimed	12,399.02
Balance of Profit and Loss brought forward from last Account	3,872,394.97
Net Profit for the past Half-Year	10,554,851.61
	Y.1,416,054,448.07

ASSETS

		Yen
Capital Unpaid		26,011,500.00
Cash Account:—		
In Hand	Y. 45,598,542.61	
At Bankers	103,132,966.74	
		148,731,509.35
Investments in Public Securities and Debentures		119,397,790.52
Bills Discounted, Loans, Advances, etc.		300,099,008.66
Bills Receivable and other Sums due to the Bank		811,807,823.44
Bullion and Foreign Money		4,259,288.84
Bank's Premises, Properties, Furniture, etc.		5,747,527.26
		Y.1,416,054,448.07

PROFIT AND LOSS

Dr.	Yen
To Interest, Taxes, Current Expenses, Rebate on Bills Current, Bad and Doubtful Debts, Bonus for Officers and Clerks, etc.	135,968,557.30
To Reserve Fund	6,000,000.00
To Dividend— Y.6.00 per Old Share for 480,000 Shares; Y.21.2 per New Share (1919) for 520,000 Shares	3,982,400.00
To Balance carried forward to next Account	4,444,846.58
	Y. 150,395,803.88

Cr.	Yen
By Balance brought forward 31st December, 1919	3,872,394.97
By Amount of Gross Profits for the Half-year ending 30th June, 1920	146,523,408.91
	Y. 150,395,803.88

We have examined the above Accounts in detail, comparing them with the Books and Vouchers of the Bank and the Returns from the Branches, and have found them to be correct. We have further inspected the Securities, etc., of the Bank, and also those held on account of Loans, Advances, etc., and have found them all to be in accordance with the Books and Accounts of the Bank.

YASUNORI ASADA,
YOSHIO MATSUO,
VISCOUNT TADASUKE SAKAI,
NARUYOSHI ABE,
Auditors.

THE FIRM OF SUMITOMO

OWNERS OF BESSHI COPPER MINE, COAL MINE, ETC.

MANUFACTURERS OF

Tubes, Pates, Sheets and Bars of Copper Brass, Bronze and other Copper Alloys, Solid Drawn Steel Tubes, Nails, Electric Wires and Cables, Artificial Fertilizer, etc.

WORKS AND DEPARTMENTS

General Head Office ...	Osaka	Tokyo Sales Department ...	Tokyo
Besshi Copper Mine Office ...	Niihama, Iyo	Kure Sales Department ...	Kure near Hiroshima
Copper Sales Department ...	Osaka & Kobe	Yokosuka Sales Department	Yokosuka
Warehouses ...	Osaka, Kobe & Toyko	Hakata Sales Department ...	Hakata
Wakamatsu Coal Department ...	Wakamatsu, Chikuzen	The Sumitomo Yoko ..	Shanghai
Copper Works ...	Osaka & Amagasaki	The Sumitomo Yoko ..	Hankow
Electric Wire and Cable Works ...	Osaka	The Sumitomo Yoko...	Tientsin
Fertilizer Manufactory ...	Niihama, Iyo	The Sumitomo Bank of Hawaii ...	Honolulu
Sapporo Mine Office ...	Sapporo, Hokkaido	The Sumitomo Bank of Seattle ...	Seattle

THE SUMITOMO STEEL WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of every description for Railways, Shipbuilding Yards, Mines, Hydraulic, Electric and other Engineering Works, etc. etc.

THE SUMITOMO BANK, LIMITED

OSAKA, JAPAN

Cable Address: "SUMITBANK"

President: Baron K. SUMITOMO

Capital Subscribed ...	Yen 70,000,000	Reserve Fund ...	Yen 12,000,000
Capital Paid-up ...	„ 40,000,000	Deposits (30th June, 1920) ...	„ 360,000,000

HOME BRANCHES:

Tokyo, Yokohama, Nagoya, Kyoto, Kobe, Hyogo, Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Kokura, Wakamatsu, Hakata, Kurume.

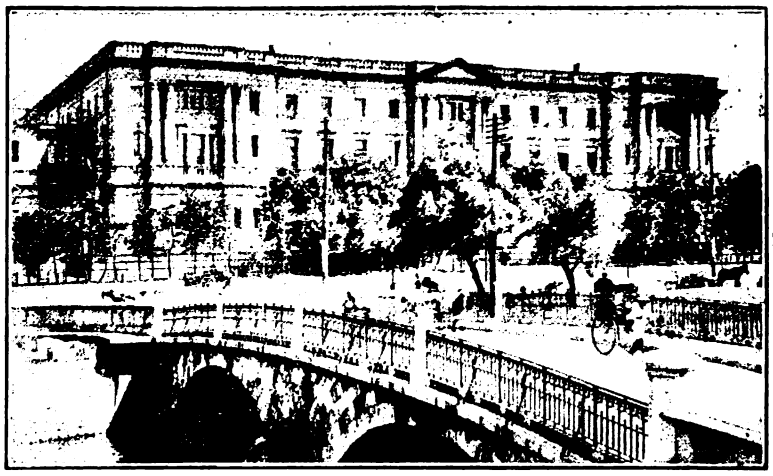
FOREIGN OFFICES:

New York, San Francisco, Shanghai, Hankow, Bombay, London, Seattle (Affiliated Bank), Hawaii (Affiliated Bank).

AGENTS:

National City Bank of New York, New York. Lloyds Bank Ltd., London.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.



THE SEVENTY-SIXTH HALF-YEARLY REPORT

OF

THE NIPPON GINKO

(THE BANK OF JAPAN)

For the First Half of 1920

BALANCE SHEET, June 30th, 1920

Liabilities

	Yen
Notes Issued	1,349,065,449.500
Funds lodged to secure against Fractional Government Notes	184,890,000.057
Government Deposits	1,046,795,737.735
Government Railways Deposits	5,239,780.042
Deposits for Payment of Principal and Interest of National Debts	36,001,275 326
Proceeds from the Issue of Government Bonds	22,720.170
Funds for Payment of Mint Certificates	3,722,746.404
Current Accounts	68,863,039.120
Deposit Receipts	4,500.000
Bills Payable	30,451 520
Due to Other Banks	102,089.750
Suspense Receipts	8,618,971.929
Taxes Unpaid	8,285,105.030
Authorized Capital	60,000,000.000
Reserve Fund	35,390,000.000
Reserve for Depreciation of Bank Premises	425,000.000
Dividends Unpaid	426.000
Profit brought forward from Last Half-Year	2,110,621.004
Net Profit for the Current Half-Year	6,039,071.682
Total	2,815,606,985.329

Assets

	Yen
Statutory Advances to Government	22,000,000.000
Loans	1,950,000.000
Advances on Foreign Bills	294,836,891.590
Advances on Current Accounts	521,465.490
Bills Discounted	362,798,693.920
Deposits	40,556,267.923
Government Bonds	84,001,359.580
Bullion	739,597,553 690
Due from Other Banks	173,528.340
Foreign Agencies Accounts	773,395,959.272
Agencies Accounts for Government Railways	5,239,780.042
Agencies Accounts for National Debts	32,973,256.505
Sub-Agencies Accounts	1,795,897.555
Suspense Payments	2,555,838.150
Office Grounds and Buildings	2,209,661.649
Uncalled Capital	22,500,000.000
Funds held for Fractional Government Notes as per Contra	184,890,000.057
Cash on Hand	243,610,831.566
Total	2,815,606,985.329

PROFIT AND LOSS ACCOUNT

Dr.

	Yen
Current Expenses, Taxes, Interest, etc.	33,027,536.528
Dividends at the rate of 12 per cent. per annum	2,250,000.000
Amount carried to Reserve Fund	3,000,000.000
Amount carried to Reserve for Depreciation of Bank Premises	10,000.000
Bonus and Allowances	290,000.000
Balance carried forward to next Half-Year	2,599,692.686
Total	41,177,229.214

Cr.

	Yen
Gross Profit for the Current Half-Year	39,066,608.210
Balance brought forward from Last Half-Year	2,110,621.004
Total	41,177,229.214

We have examined the above statement and found the same to be correct.

TAKENOSUKE SAMEJIMA, *Auditor.*
MUNEYOSHI YAMAGUCHI, *Auditor.*
IKUTARO SHIMA, *Auditor.*
Viscount NOBUMITSU AOKI, *Auditor.*
TADASHI SANDA, *Auditor.*

JUNNOSUKE INOUYE, *Governor.*
SEISHIRO KIMURA, *Vice-Governor.*
EIGO FUKAI, *Director.*
JIRO ASOH, *Director.*
TOYOTARO YUKI, *Director.*

DAI-ICHI GINKO, LIMITED

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Capital (Authorized)	- - -	Yen 50,000,000
Capital (Paid-Up)	- - - -	Yen 29,525,000
Reserve Fund	- - - -	Yen 18,500,000

BOARD OF DIRECTORS:

Y. SASAKI, Esq., Chairman. Y. KUSAKA, Esq. K. SAIONJI, Esq.
T. KUMAGAI, Esq. K. ISHII, Esq. Y. NOGUCHI, Esq.
Prince Y. TOKUGAWA. S. SASAKI, Esq. T. SUGITA, Esq.

AUDITORS:

T. DOKI, Esq. J. TAKEYAMA, Esq.

ADVISER:

Baron E. SHIBUSAWA.

Head Office: No. 1 Kabuto-cho, Nihombashi-ku, Tokyo

BRANCHES:

YOKOHAMA, OSAKA, KOBE, HYOGO, KYOTO, FUSHIMI, NAGOYA, YOKKAICHI, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, SEOUL AND FUSAN.

CORRESPONDENTS:

The Bank, in addition to its own Branches, has Correspondents in the principal cities and towns at home and abroad, and is able to give every facility for the transmission and collection of money.

THE RATES OF INTEREST on Current Accounts, Fixed Deposits and Special Current Accounts can be ascertained on application.
CHEQUES certified by this Bank are taken as cash for the Customs Duties, and DEPOSIT RECEIPTS of this Bank as security for the Consumption Tax.

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Capital fully paid up	... ...	P. 6,750,000.00
Reserve funds	... ...	P. 4,550,000.00

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

London: National Bank of Scotland, Ltd.
Spain: Banco Hispano-Americano
Hongkong: Netherland India Commercial Bank
San Francisco: Wells Fargo Nevada National Bank
New York: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.
Paris: Comptoir National d'Escompte
Australia: Bank of New South Wales
Shanghai: Bank of Canton, Ltd.
Chicago: Continental & Commercial National Bank
Japan: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, *President*

No. 10 PLAZA DE CERVANTES, MANILA, P. I.

Hongkong and Shanghai Banking Corporation

Paid-up Capital ...	$15,000,000
Reserve Funds: Sterling ...	£1,500,000
Silver ...	$23,000,000
Reserve Liability of Proprietors ...	$15,000,000

Court of Directors:

Hon. Mr. E. V. D. PARR, Chairman
A. H. COMPTON, Esq., Deputy Chairman
G. M. DODWELL, Esq.
G. T. M. EDKINS, Esq.
A. S. GUBBAY, Esq.
Hon. Mr. P. H. HOLYOAK
Hon. Mr. J. JOHNSTONE
A. O. LANG, Esq.
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . N. J. STABB

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY, BANGKOK, BATAVIA, BOMBAY, CALCUTTA, CANTON, COLOMBO, FOOCHOW, HANKOW, HARBIN, ILOILO, IPOH, JOHORE, KOBE, KUALA LUMPUR, LONDON, LYONS, MALACCA, MANILA, NAGASAKI, NEW YORK, PEKING, PENANG, RANGOON, SAIGON, S. FRANCISCO, SHANGHAI, SINGAPORE, SOURABAYA, TIENTSIN, TSINGTAO, VLADIVOSTOCK, YOKOHAMA

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

Managing-Directors:
YUTSUHA SATO, Esq. KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
VISCOUNT YUKIYOSHI AOYAMA
YOSHITERU SHIMIZU, Esq.
MARQUIS YORIMICHI TOKUGAWA
HON. NAGAYUKI ASANO
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
NAOYOSHI YAMAMOTO, Esq.
BARON MICHITOMO IWAKURA
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

Head Office Manager: **Kiyosumu Tanikawa, Esq.**

LONDON BANKS AND AGENTS:
LAZARD BROTHERS & CO., LTD. UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LTD.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan.

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED - - - - - -	Yen 50,000,000
CAPITAL PAID-UP - - - - - - -	Yen 45,000,000

HEAD OFFICE:

MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:

TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
Y. ONO, Esq., Vice-President
K. IYANAGA, Esq., Director
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:

NAGATANE SOMA, Esq.
KINTARO HATTORI, Esq.
KINICHI KAWAKAMI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City
Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

THE

MITSUBISHI BANK,

LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku,
Tokyo, Japan.

BRANCH OFFICES:

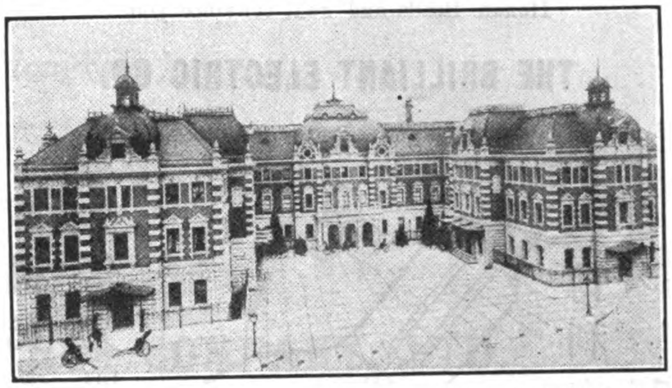
Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1680



Capital Subscribed... ....Y. 100,000,000.00
Capital Paid-Up....................Y. 60,000,000.00
Reserve Fund (July 1920)......Y. 24,200,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku,
TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

MORINOSUKE MITSUI, Esq., TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

OTARU, FUKAGAWA (Tokyo), HAKOZAKI (Tokyo), YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London: Barclays Bank, Ltd.
London Joint City & Midland Bank, Ltd.

New York: The National City Bank of New York.
Guaranty Trust Co. of New York.
The Chase National Bank.
Bankers Trust Co.

Paris: Banque de l'Union Parisienne.
Comptoir National d'Escompte de Paris.

Bombay: National Bank of India, Ltd.

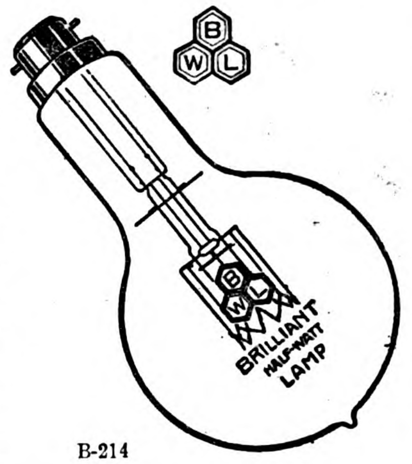
BRILLIANT Half Watt LAMPS

give MORE LIGHT, BETTER LIGHT at LESS COST than any vacuum lamp.

Call at our Show Room Nanking corner Honan Roads and we'll convince you.

THE BRILLIANT ELECTRIC CO.

Dependable Suppliers of Everything Electrical.



博利安半華德電泡
加倍光明減半電費

博利安電料公司
上海英大馬路抛球場
電話中央四九〇七

B-214

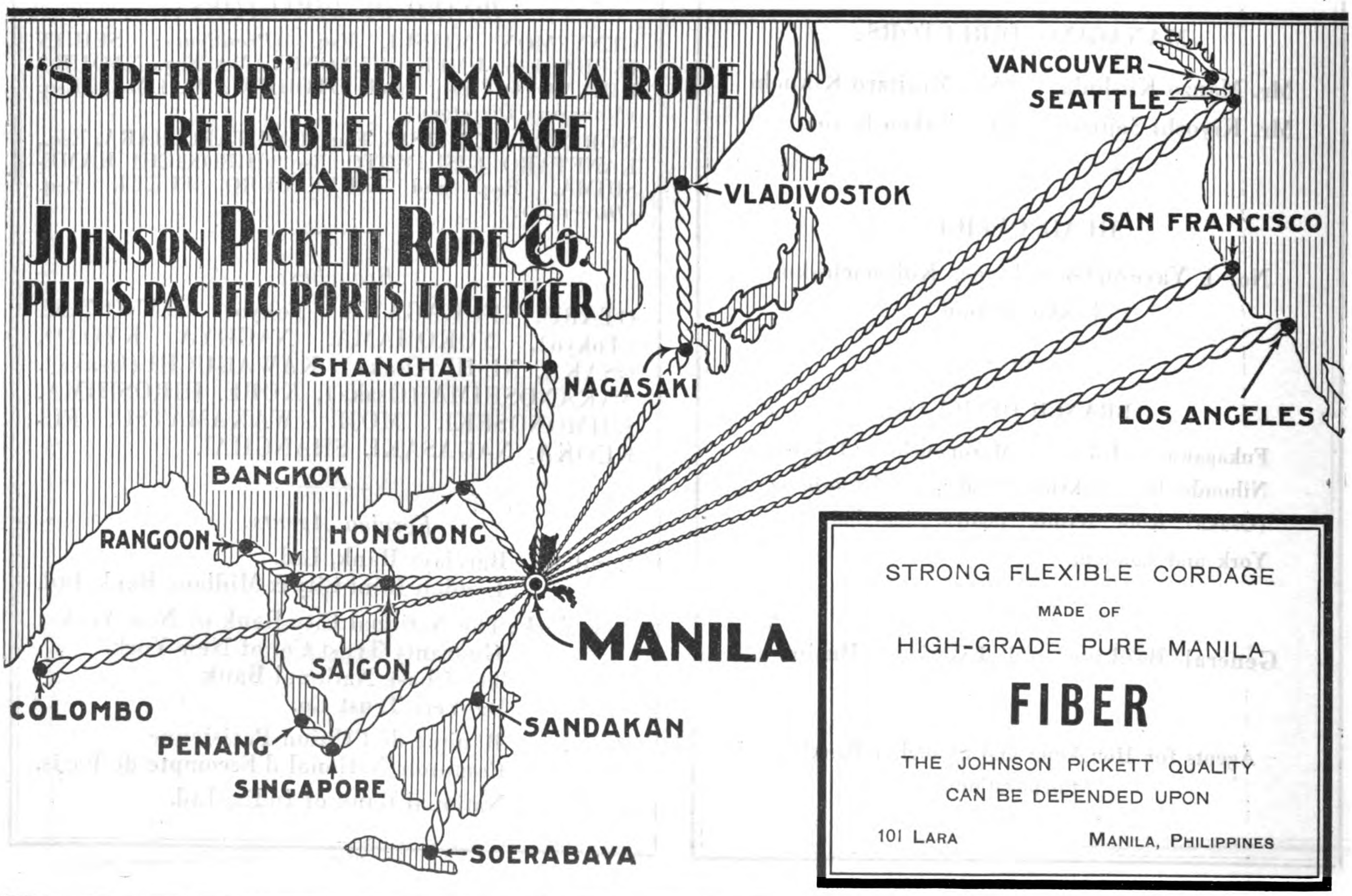
MITSUBISHI MARINE & FIRE INSURANCE Co., Ltd.

MITSUBISHI KAIJO KASAI HOKEN K. KAISHA

Head Office:
MARUNOUCHI, TOKYO

SUBSCRIBED CAPITAL - -	Yen 5,000.000
PAID-UP CAPITAL - - -	„ 1,250.000

Branches and Agencies:
LONDON, NEW YORK, OSAKA, KOBE, SHANGHAI, AND OTHER IMPORTANT CITIES AND PORTS IN THE WORLD



UNION INSURANCE SOCIETY OF CANTON, LIMITED

(Incorporated in Hongkong)

With which are amalgamated

BRITISH TRADERS' INSURANCE COMPANY, LTD.

AND

THE CHINA FIRE INSURANCE COMPANY, LTD.

(Both incorporated in Hongkong)

JOINT ASSETS EXCEED $30,000,000

HEAD OFFICE:	HONGKONG
LONDON BRANCH:	9 Royal Exchange, E.C.
LONDON FIRE OFFICE:	10 George Yard, E.C.

BRANCHES AND AGENCIES THROUGHOUT THE WORLD

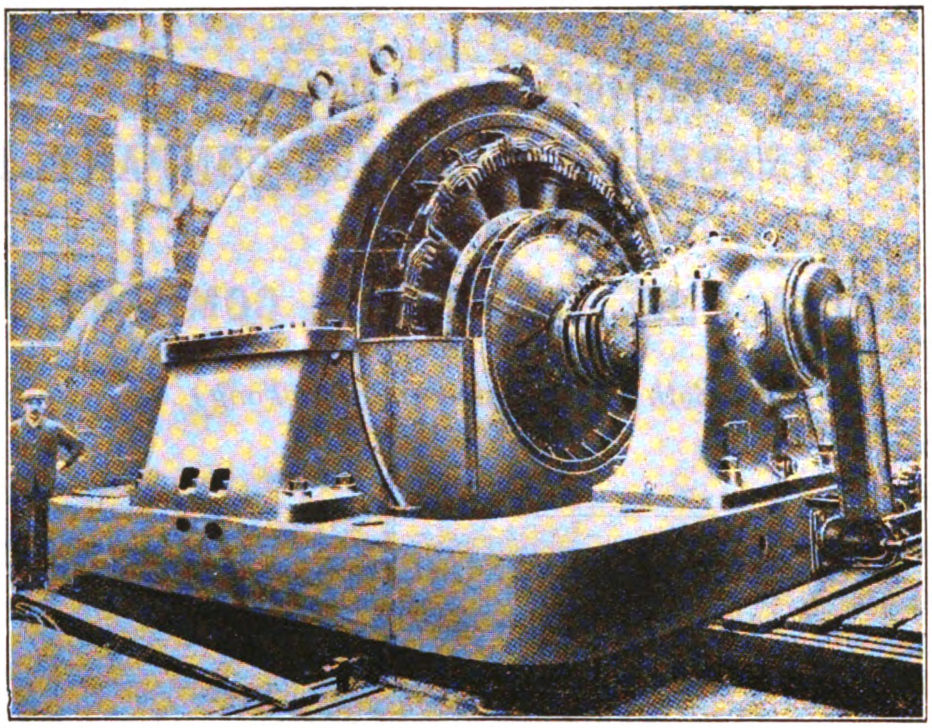
Marine, Fire, Accident, Motor Car, Burglary, Guarantee, Workman's Compensation, and all other classes of Insurance, except Life.

C. MONTAGUE EDE,
General Manager.

THE ENGLISH ELECTRIC COMPANY, LIMITED

WORKS—
ORDNANCE WORKS, COVENTRY.
SIEMENS WORKS, STAFFORD.
DICK, KERR WORKS, PRESTON.
PHOENIX WORKS, BRADFORD.
WILLANS WORKS, RUGBY.

HYDRO-ELECTRIC MACHINERY



ONE OF SIX 7,775 K.V.A. HYDRO-ELECTRIC GENERATORS SUPPLIED TO A JAPANESE COMPANY

THE COMPANY ARE MANUFACTURERS OF: STEAM TURBINES, CONDENSERS, DIESEL OIL ENGINES, ELECTRIC POWER AND SUB-STATION PLANT, COMPLETE ELECTRIC RAILWAY AND TRAMWAY EQUIPMENTS, ROLLING STOCK, A.C & D.C. MOTORS, SWITCHGEAR, ETC.

JAPANESE OFFICE:
ENGLISH ELECTRIC CO., LTD., 3 ITCHOME, UCHISAIWAICHO, KOJIMACH-KU, TOKYO

CHINESE OFFICE:
JARDINE, MATHESON & CO., LTD., ENGINEERING DEPT., 8a YUEN-MING-YUEN ROAD, SHANGHAI

HEAD OFFICE:
QUEEN'S HOUSE, KINGSWAY, LONDON, W.C.2

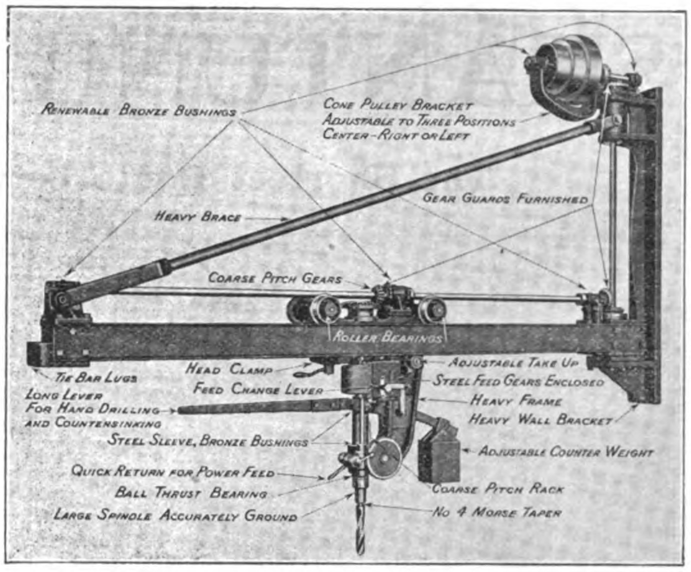
CABLES—"ENELECTICO LONDON"

"Could Not Afford to be Without these Machines,"

says one of our customers who has had them in operation several years. You would find the same condition with an installation of these WALL RADIAL DRILLS in your shop. There would be no question about the results you would obtain, as the machines are built to give absolute satisfaction, and they are, without exception, fulfilling their purpose.

Our descriptive bulletin gives details of construction.

GET IT TO-DAY.



LYND-FARQUHAR CO.

Machine Tools of Quality.

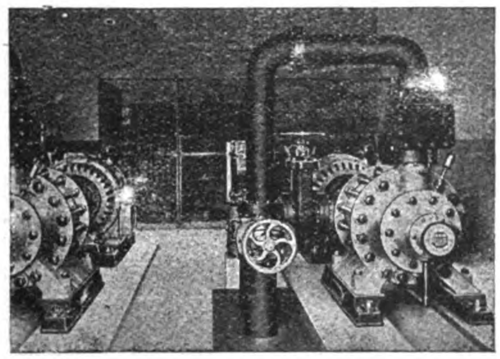
419-425 ATLANTIC AVE.,

Boston 9, Mass., U.S.A.

MADE IN FOUR STANDARD SIZES

Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.



Pumps for Waterworks Supplies

The Turbine Pump has achieved nothing better than the complete exclusion of all other kinds and types of pumps for this purpose. Whether driven by steam turbine, Diesel oil or gas engine, or by electric motor, the Turbine Pump gives the best overall economy of operation.

Low initial cost, low maintenance, small floor space and minimum of attendance.

Let us prove our statements for any installation you have in view.

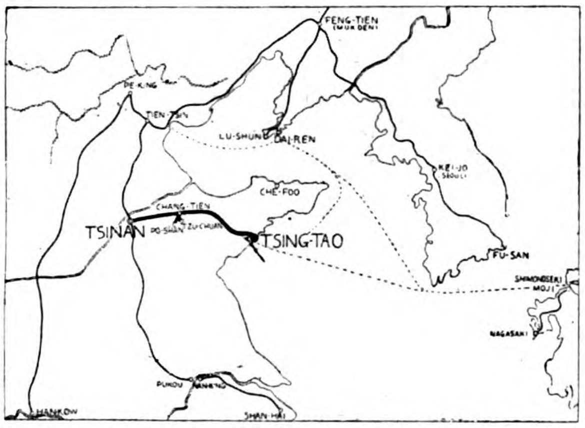
Mather & Platt, LTD.

Park Works, MANCHESTER.

Queen Anne's Chambers, LONDON.

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1	leaves Tsingtao	daily 8.00 a.m.	arrives Tsinan	6.30 p.m.
Train No. 3	leaves Tsingtao	daily 7.00 p.m.	arrives Tsinan	7.00 a.m.
Train No. 2	leaves Tsinan	daily 9.00 a.m.	arrives Tsingtao	7.30 p.m.
Train No. 4	leaves Tsinan	daily 8.30 p.m.	arrives Tsingtao	8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

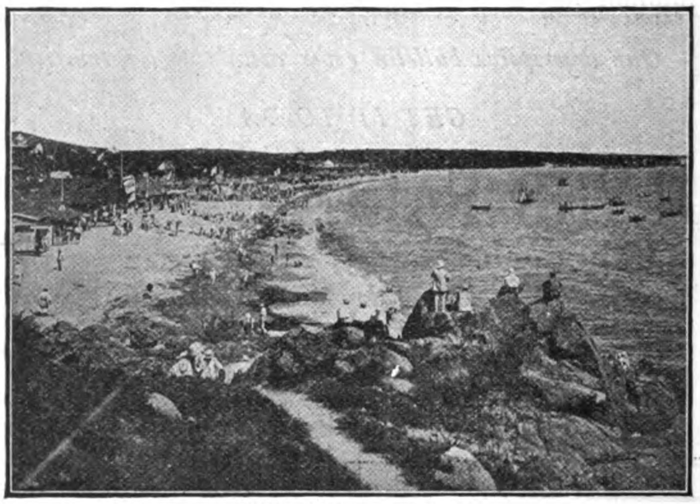
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them,

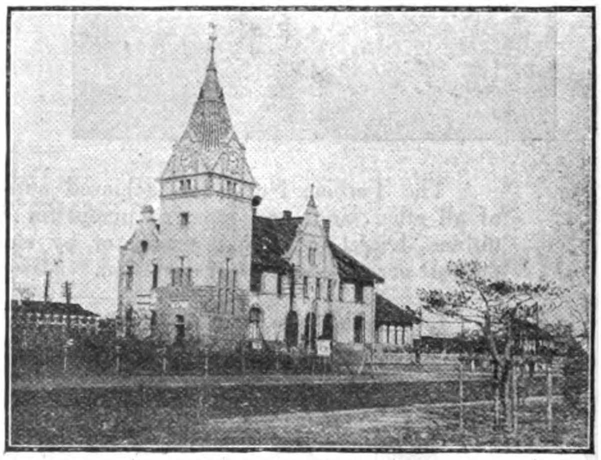
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



TSINGTAO STATION

For Further Information, please apply to

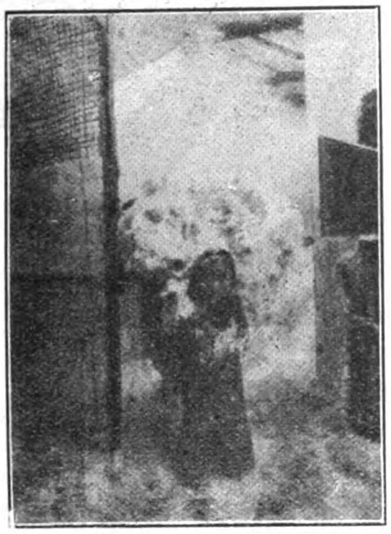
THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

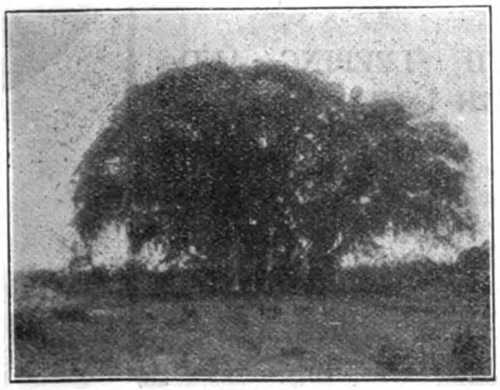
CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA? IF NOT, DO SO NOW!

Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.


Girl Carrying Capoc.


Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

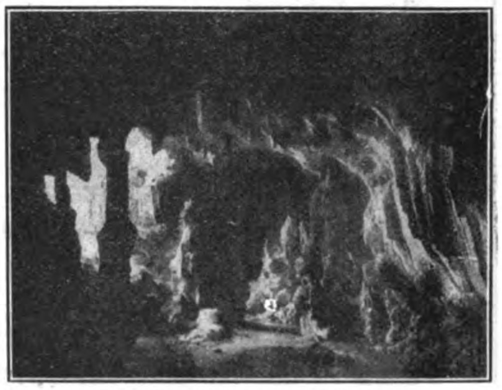
THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.

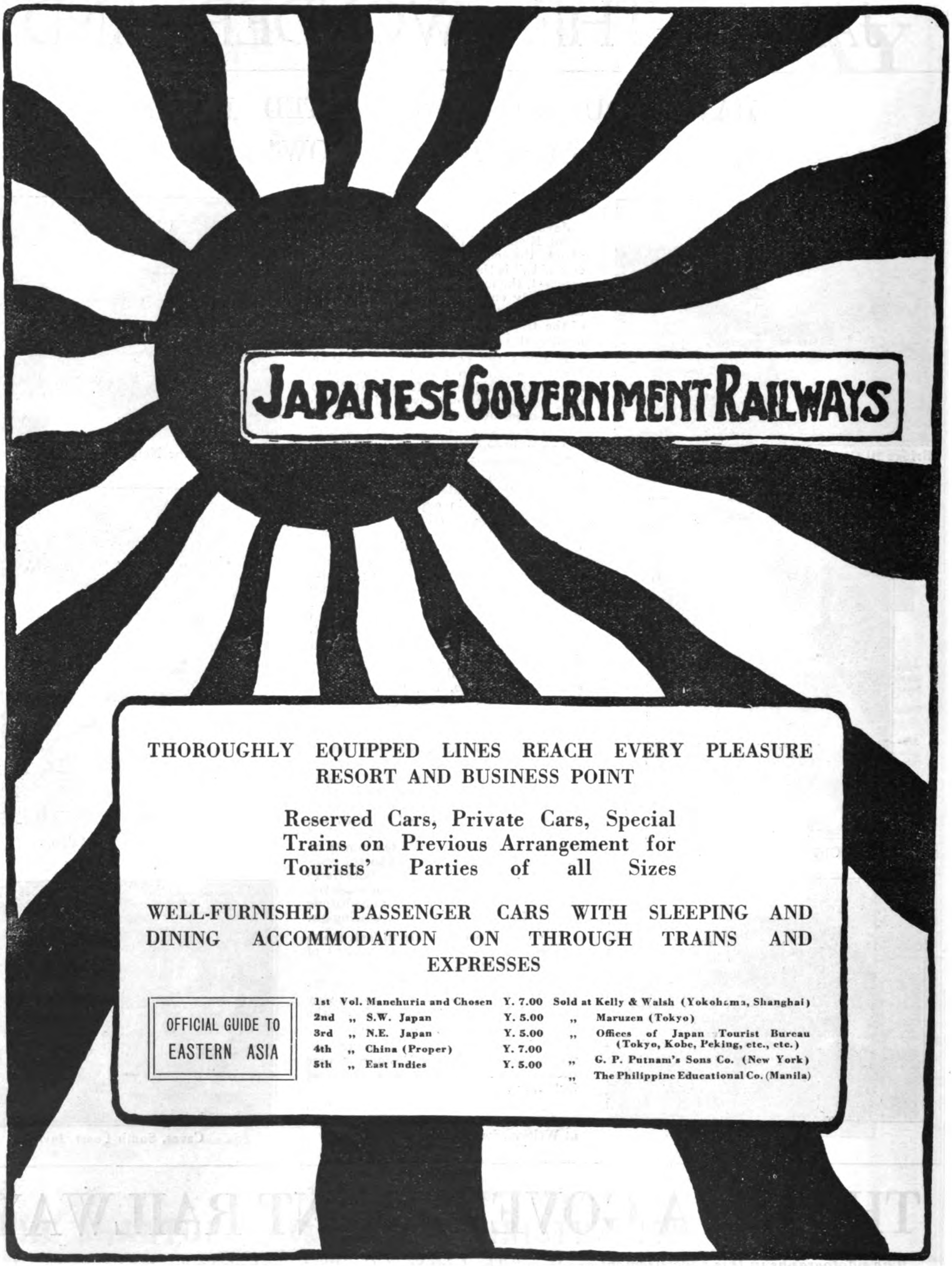
Pond in the Neighborhood of Garoet.

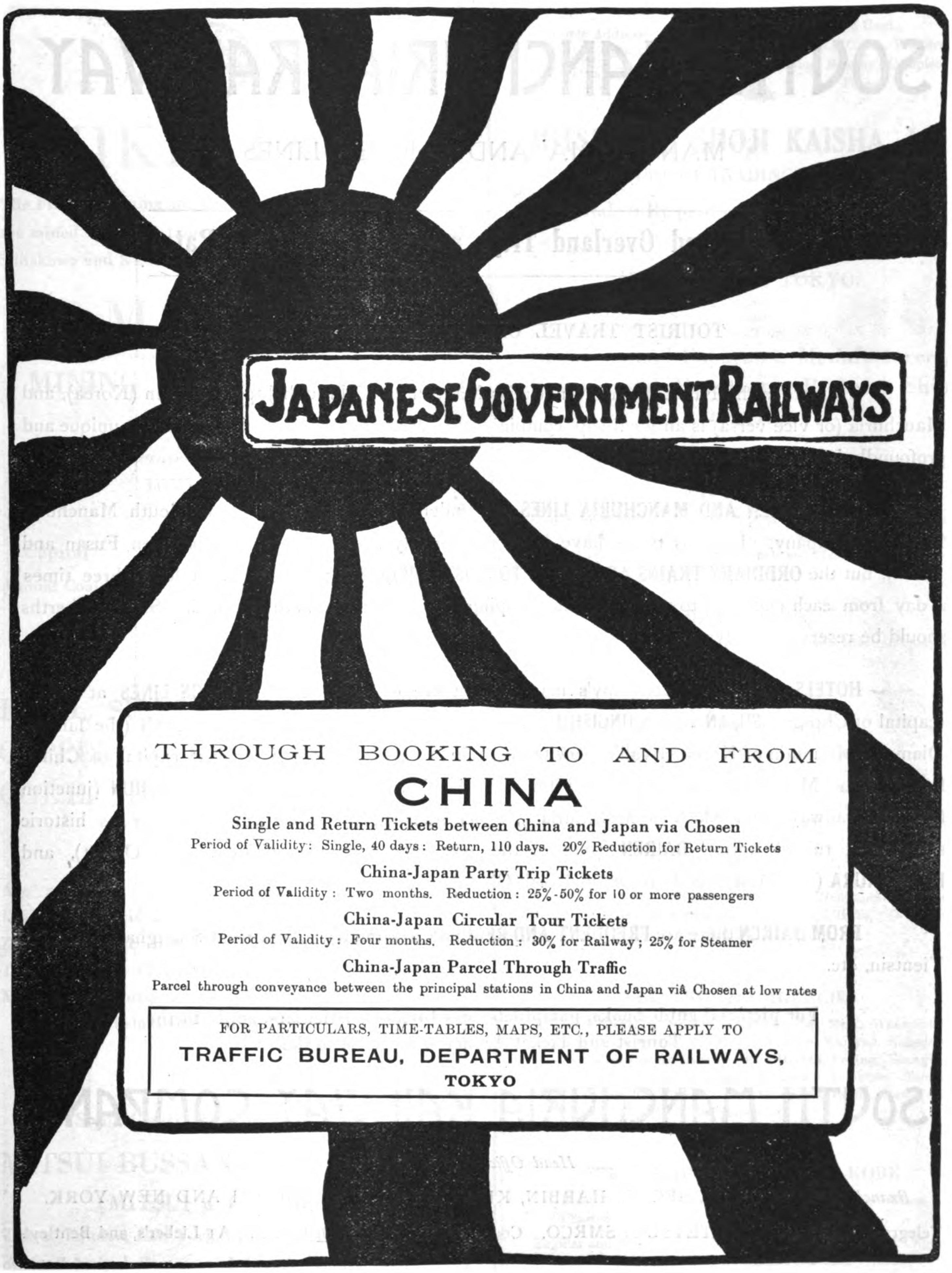
River Brantas, Malang.


Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

The photographs in this advertisement are from "The Joint-Stock Co., Photographer's Studio, Kurkdjian, Soerabaia."


JAPANESE GOVERNMENT RAILWAYS
THOROUGHLY EQUIPPED LINES REACH EVERY PLEASURE RESORT AND BUSINESS POINT
Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes
WELL-FURNISHED PASSENGER CARS WITH SLEEPING AND DINING ACCOMMODATION ON THROUGH TRAINS AND EXPRESSES
OFFICIAL GUIDE TO EASTERN ASIA
1st Vol. Manchuria and Chosen Y. 7.00 Sold at Kelly & Walsh (Yokohama, Shanghai)
2nd „ S.W. Japan Y. 5.00 „ Maruzen (Tokyo)
3rd „ N.E. Japan Y. 5.00 „ Offices of Japan Tourist Bureau (Tokyo, Kobe, Peking, etc., etc.)
4th „ China (Proper) Y. 7.00
5th „ East Indies Y. 5.00 „ G. P. Putnam's Sons Co. (New York)
„ The Philippine Educational Co. (Manila)



JAPANESE GOVERNMENT RAILWAYS
THROUGH BOOKING TO AND FROM
CHINA
Single and Return Tickets between China and Japan via Chosen
Period of Validity: Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets
China-Japan Party Trip Tickets
Period of Validity: Two months. Reduction: 25%-50% for 10 or more passengers
China-Japan Circular Tour Tickets
Period of Validity: Four months. Reduction: 30% for Railway; 25% for Steamer
China-Japan Parcel Through Traffic
Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates
FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC BUREAU, DEPARTMENT OF RAILWAYS,
TOKYO

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

MIIKE COAL

The Finest Steaming and Bunker Coals of the Far East are mined from the famed Miike, Tagawa, Yamano, Sunakawa and Kawakami Collieries operated by the

MITSUI

MINING COMPANY, LTD.

HEAD OFFICE:
No. 1 Surugacho, Nihonbashi-Ku,
TOKYO, JAPAN

Capital - - Yen 100,000,000

Annual Coal Output is equal to one-quarter of Total Japanese Mines.

LEAD, SILVER, GOLD, ZINC, COPPER, SPELTER, SULPHUR, COKE, IRON, CHEMICALS and DYES

Are produced from the Company's, KAMIOKA, Lead, Silver and Zinc Mine; SANO, Copper and Zinc Mine; KUSHIKINO, Gold Mine; KONGO, Tungsten Mine; IWAONOBORI, Sulphur and Metal Mine; Zinc Plants, Coke, Dyestuffs and By-products Establishments in Miike.

***Sole Agents for our Products*:**

MITSUI BUSSAN KAISHA, Ltd.

(MITSUI & Co., Ltd.)

Tokyo, London, New York, Shanghai, Hongkong, and other Principal Commercial Centres of the World.

Cable Address: "IWASAKISAL-TOKYO"

Code Used: A. 1., A.B.C. 5th, Western Union, Bentley's Complete Phrase

MITSUBISHI SHOJI KAISHA, LD.

(MITSUBISHI TRADING CO., LTD.)

Capital, fully paid-up - - - Y. 15,000,000

***Head Office*:**
MARUNOUCHI, TOKYO.

Importers and Exporters, Manufacturers, Commission Merchants, Brokers, Ship Owners.

EXPORTING:

Coal, Copper and all Other Descriptions of Metals, Minerals and Cereals, Chemicals, Oil, Paper, Glass, Canned Fish, Silk Goods, and General Oriental Products and Merchandise

IMPORTING:

Iron, Steel, Machinery, Machine Tools, Chemicals, and General Merchandise

ANNUAL PRODUCTION:

Electrolytic Copper Ingots	20,000	Tons
Pig Iron	100,000	,,
Steel	50,000	,,
Coal	3,500,000	,,

COLLIERIES:

Takashima, Ochi, Yoshinotani, Kishidake, Namazuta, Shinnew, Hojo, Kanada, Kamiyamada, Ashibetsu, Bibai, O-Yubari, and Sakito

BRANCHES and AGENCIES:

Tokyo, Yokohama, Nagoya, Osaka, Kobe, Moji, Wakamatsu, Karatsu, Nagasaki, Otaru, Tsuruga, Kure, Muroran, Hakodate, Kushiro, Vladivostok, Dairen, Kirin, Harbin, Peking, Shanghai, Hankow, Hongkong, Canton, Tientsin, Tsingtao, Tsinan, Singapore, London, Paris, Lyon, Marseilles, Berlin, New York, Seattle.

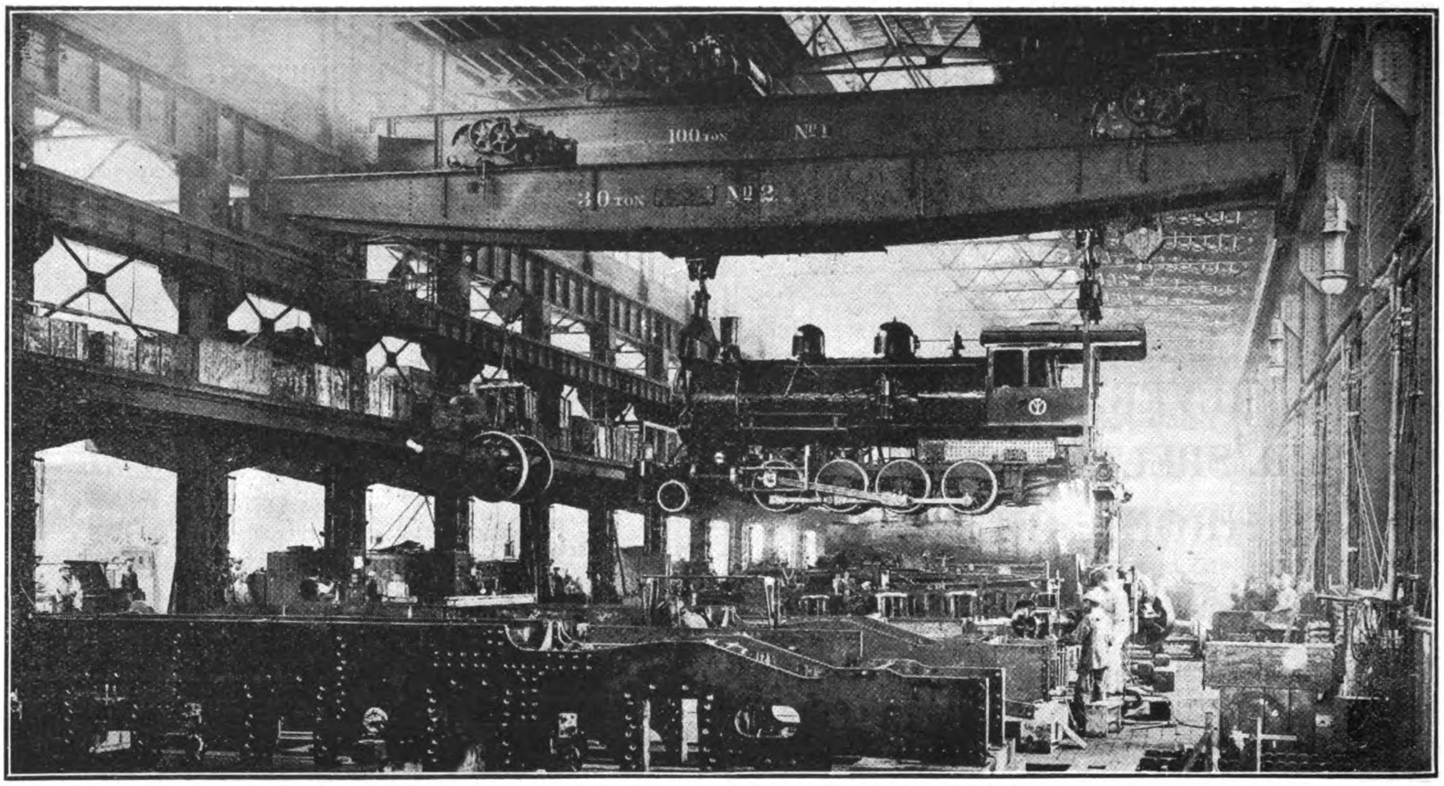
STEAMSHIP DEPARTMENT—KOBE

Fleet Owned	25,000	Tons Gross
Chartered Steamers	12,000	,, ,,

Regular and Irregular Routes between home ports and Chinese and South Sea Islands Ports, etc.

SOUTH MANCHURIA RAILWAY

SHAKAKO RAILWAY WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

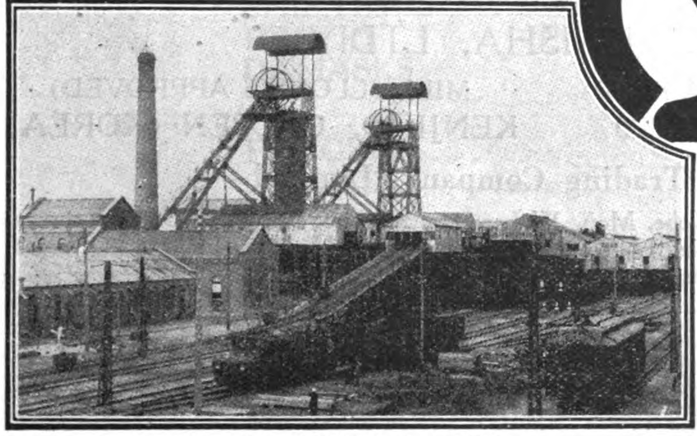
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

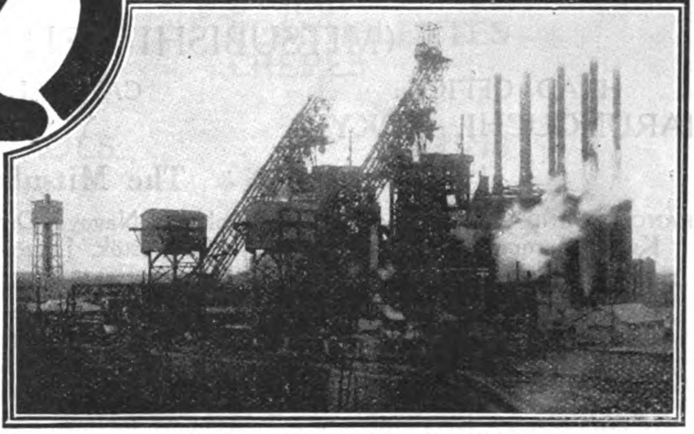
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

Dairen, Port Arthur, Newchwang (Yingkou), Tientsin, Tsingtao

Agencies:

Chefoo, Takao (Formosa), Osaka, Manila, Nagoya, Hongkong, Batavia, Shanghai, Sourabaya, Yokohama, Moji, Singapore, South Seas, Saigon, Penang, Niigata, etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,

South Manchuria Railway Company, Dairen

ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

BUT THE TWAIN HAS MET AND BLENDED HERE

IRON & STEEL

PIG IRON PLATES AND SECTIONS

MITSUBISHI IRON AND STEEL CO., LTD.

(MITSUBISHI SEITETSU KAISHA, LTD.)

HEAD OFFICE: MARUNOUCHI, TOKYO

CAPITAL: (PAID UP) YEN 30,000,000

MILL (LLOYD'S APPROVED) KENJIHO, CHOSEN (KOREA)

Sales Agents: **The Mitsubishi Trading Company, Limited**

BRANCHES AND AGENCIES: Tokyo, Yokohama, Nagoya, Osaka, Kobe, Moji, Wakamatsu, Karatsu, Nagasaki, Otaru, Tsuruga, Kure, Muroran, Hakodate, Kushiro, Vladivostok, Dairen, Kirin, Harbin, Peking, Shanghai, Hankow, Hongkong, Canton, Tientsin, Tsingtao, Tsinan, Singapore, London, Paris, Lyon, Marseilles, Berlin, New York, Seattle.

Copenhagen
Christiana
Elsinore

A. O. ANDERSEN & Co.

New York
Portland, Ore.
Seattle

Cable Address: "PACAO" **Code: Bentley's A.B.C. 5th.**

SAN FRANCISCO, CAL.

Shipowners and Merchants
Importers and Exporters

Steel and Wooden Vessels and Motor Ships for Sale with Prompt Delivery.

Vessels for Charter and Sale suitable for Coasting or Trans-Pacific Trade.

Exporters of Steel, Lumber, Flour, Grain, Salmon, Fruits, Chemicals, etc.

Importers of Beans and Bean Cake, Rice, Copra, Vegetable Oils and Oil Seeds, Wood Oil, Peanuts, Albumen and Egg Yolk, and all Oriental Products.

244 CALIFORNIA ST. **SAN FRANCISCO**

JAPANESE

TEXTILES

FOR EXPORT

Standard Printed and Dyed Cotton and Silk Fabrics

SHIRTINGS	SHEETINGS	DRILLS
PRINTS	CRETONNES	FLANNELETTES
DAMASKS	TOWELING	CREPES
	ETC. ETC.	
PONGEES	BROCADES	SATINS
CREPES	SILKS	

FUJI GASSED SPINNING COMPANY, LIMITED

(FUJI GASU BOSEKI KABUSHIKI KAISHA)

Head Office:
GOCHOME, OSHIMA-MACHI
NEAR TOKYO
CABLE ADDRESS: "FUHO"

CAPITAL - - Yen 38,000,000
OPERATING
450,000 Spindles and
1,775 Looms

Business Office:
SHICHOME, HAKOZAKI-CHO,
NIHONBASHI-KU,
TOKYO

Silks, Crepes, Brocades, Cotton Cloths, Muslins

SILK AND COTTON YARNS, NOILS, etc.

OUR EXPORT DEPARTMENT
IS REPRESENTED IN ALL THE IMPORTANT COMMERCIAL CENTERS OF THE WORLD AND CAN FURNISH PROMPTLY FULL INFORMATION AND QUOTATIONS REGARDING THE LARGE VARIETY OF TEXTILES MADE IN OUR MILLS

KANEGAFUCHI SPINNING COMPANY, LIMITED

HIGASHI-SHIRIIKE, KOBE, JAPAN

Trade Mark

FORMOSAN CANE

SUGAR

Trade Mark

RAW, REFINED AND IN CUBES

FINEST **ALCOHOL** QUALITY

Formosa Sugar Manufacturing Co., Ltd.

(Taiwan Seito Kaisha, Limited)

THE LARGEST SUGAR PRODUCERS IN ASIA

Operating the modern Mills with a grinding capacity of 7,800 tons of cane per day and two Alcohol Distilleries in Formosa, also Sugar Refinery in Kobe.

HEAD OFFICE:—Takau, Formosa, JAPAN.
TOKYO OFFICE:—22 Honkoku-cho, Itchome, Nihonbashi-ku.
SOLE AGENTS:—Mitsui Bussan Kaisha, Ltd. (Mitsui & Co., Ltd.).
Tokyo, London, New York, Lyon, etc,

TRADE MARK

CABLE ADDRESS: "SUGAR," TOKYO
CODE: A.B.C. 5TH EDITION
Head Office:
No. 12 Sanchome, Kakigara-Cho,
Nihonbashi-Ku, TOKYO

RAW **SUGAR** REFINED

THE JAPAN SUGAR CO., LTD.
(DAI NIPPON SEITO KABUSHIKI KAISHA)
CAPITAL: YEN 18,000,000; PAID-UP: YEN 12,000,000

TRADE MARK

AMERICAN BLOWER CO.

(EXPORT DEPARTMENT)

141 BROADWAY, NEW YORK, U.S.A.

ENGINEERS AND MANUFACTURERS

FANS AND BLOWERS

For Heating, Ventilating, Cooling, Humidifying, De-Humidifying, Mechanical Draft, etc.

DRYING SYSTEMS

For Lumber, Bricks, Fruit and Vegetables, etc.

BLAST EQUIPMENT

For Forges, Furnaces, Cupolas.

Conveying Materials by Air Blast.

STEAM ENGINES

For Blowers, Generators, Pumps, Mechanical Stokers, etc.

STEAM TRAPS

Executive Offices: Detroit, Mich., U.S.A.

Works: Detroit, Mich., U.S.A. Troy, N.Y., U.S.A.

LET US GIVE YOU THE BENEFIT of our EIGHTY-EIGHT YEARS' EXPERIENCE manufacturing

PARKER'S PRODUCTS

"BUILT UP TO A STANDARD NOT DOWN TO A PRICE"

Coffee Mills
Tinned Steel Spoons, Knives and Forks
Alarm Clocks
Electric, Gas aud Oil Lamps
Vices
Bath Room Accessories
Wood Screws
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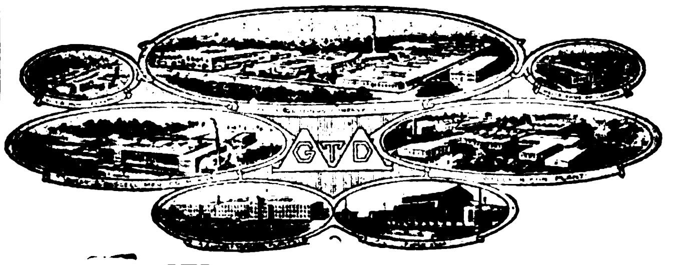

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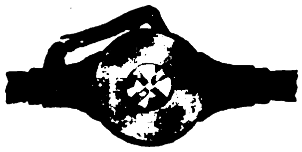

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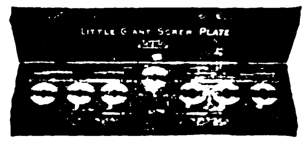

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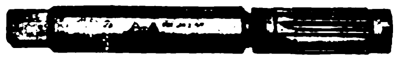

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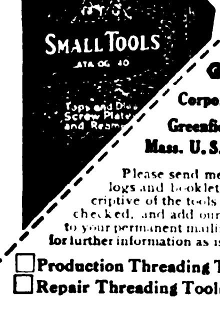

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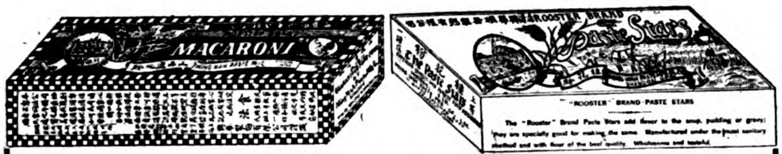

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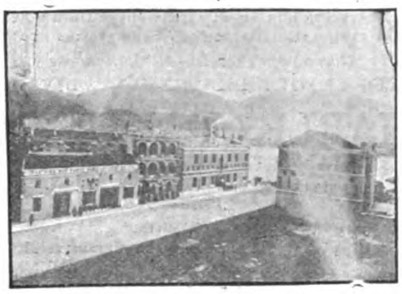

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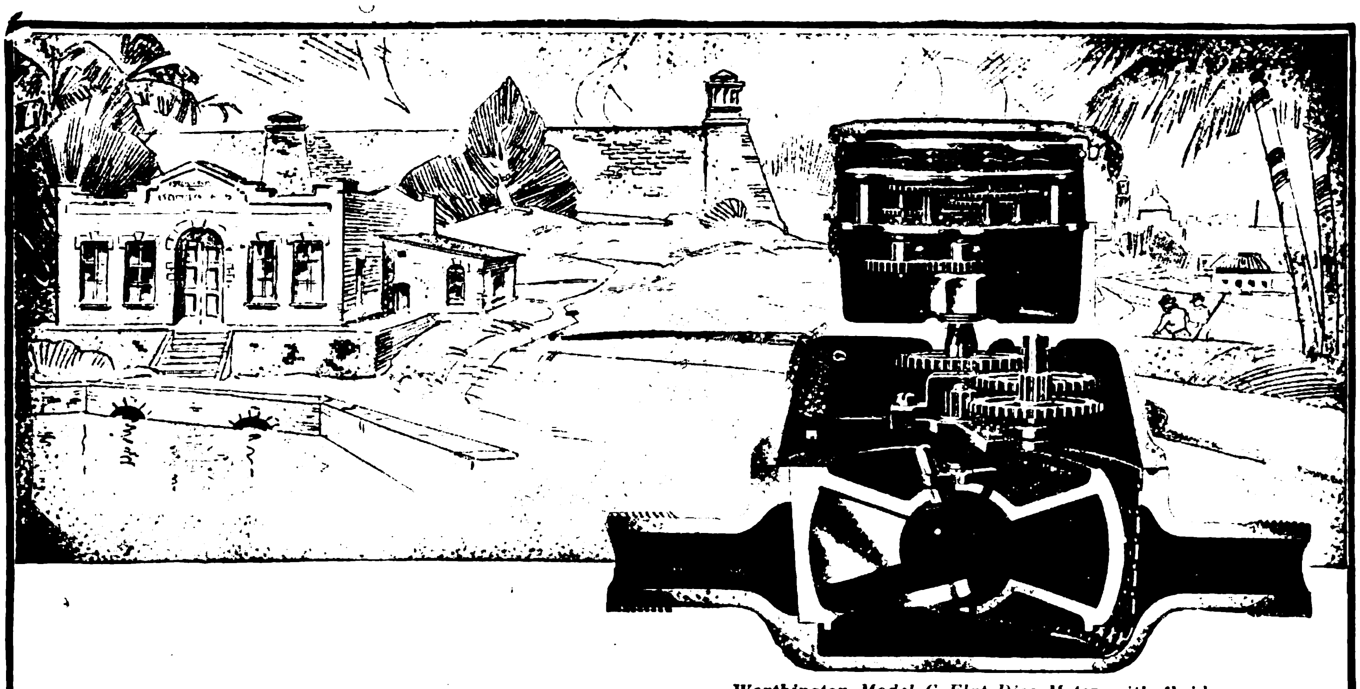

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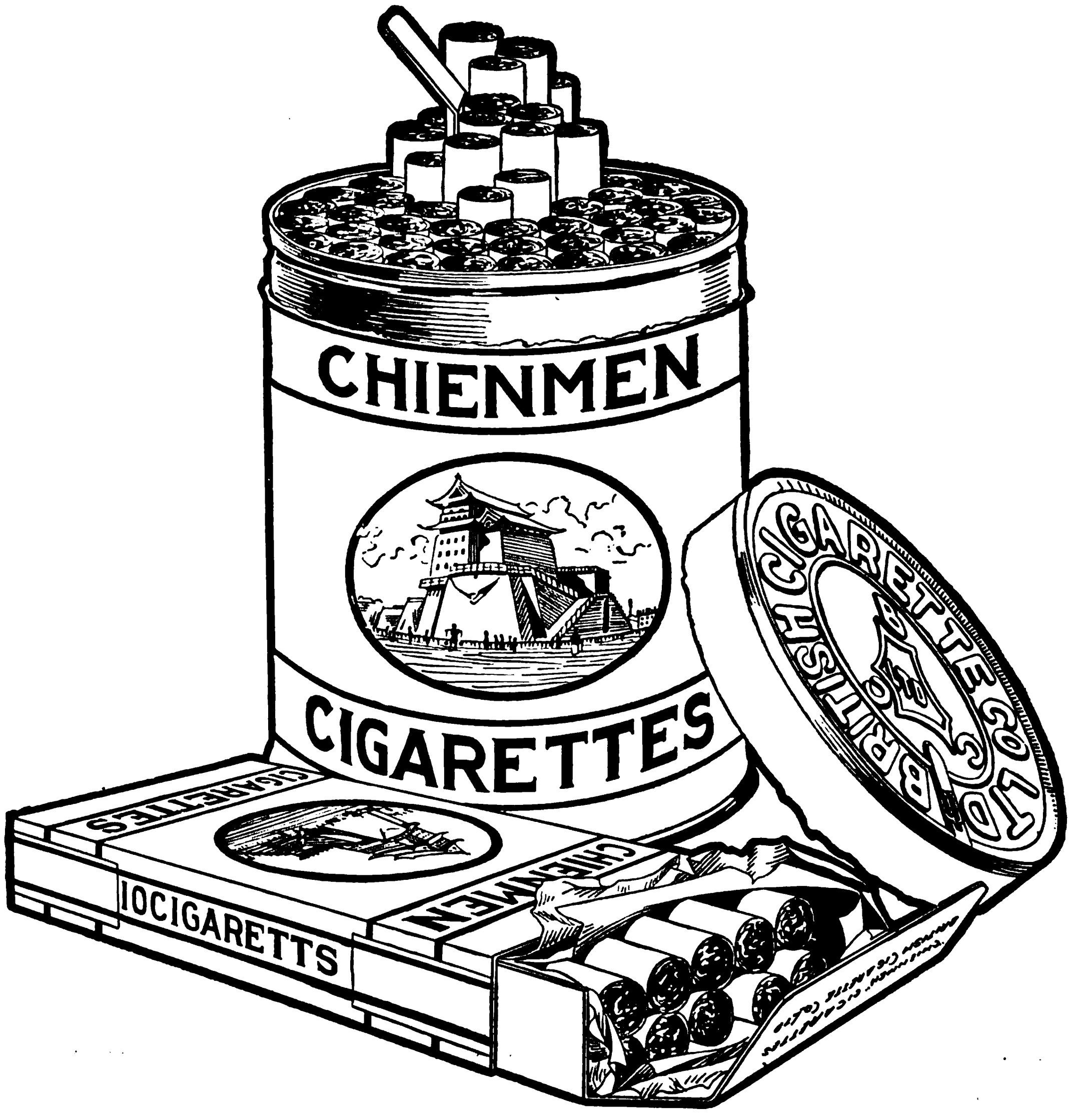

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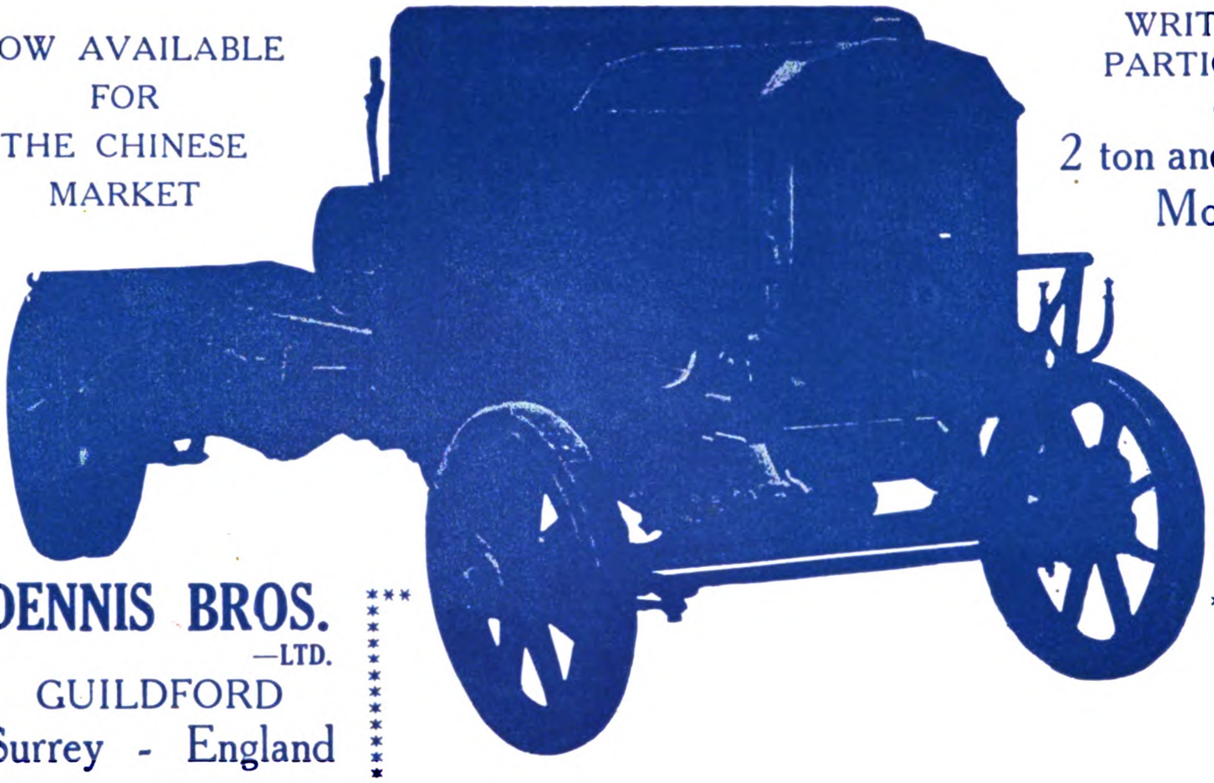

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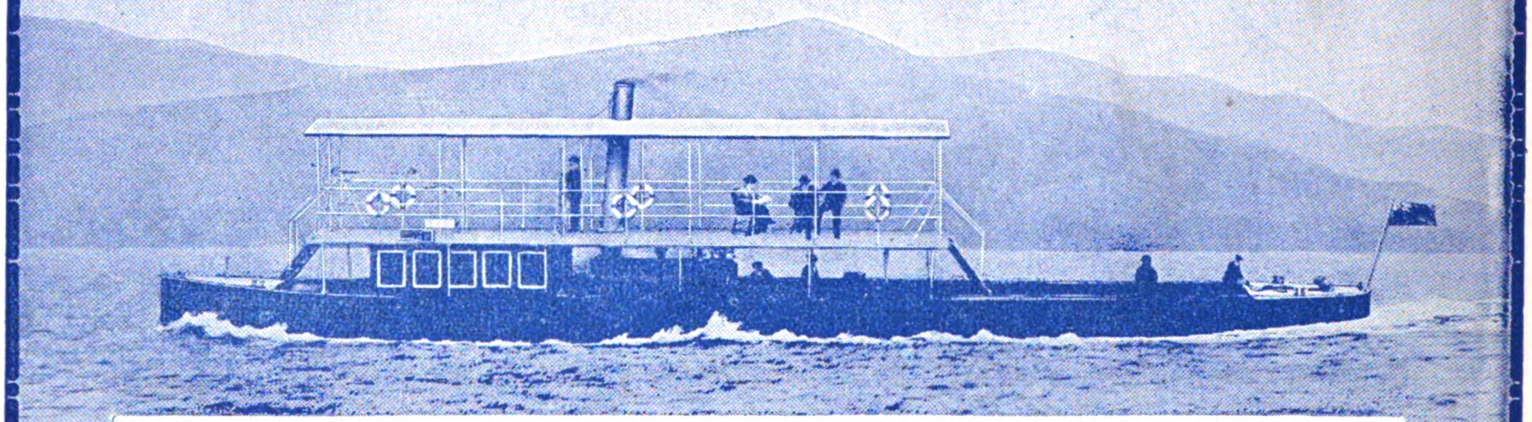

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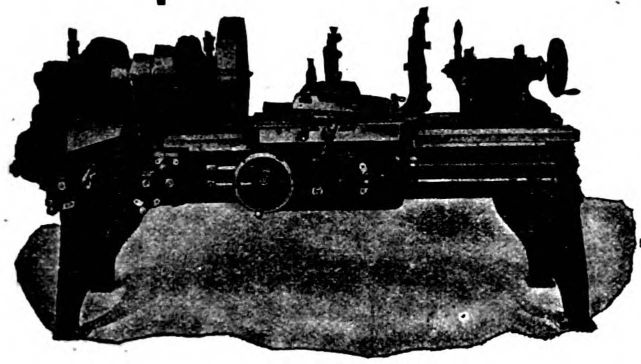

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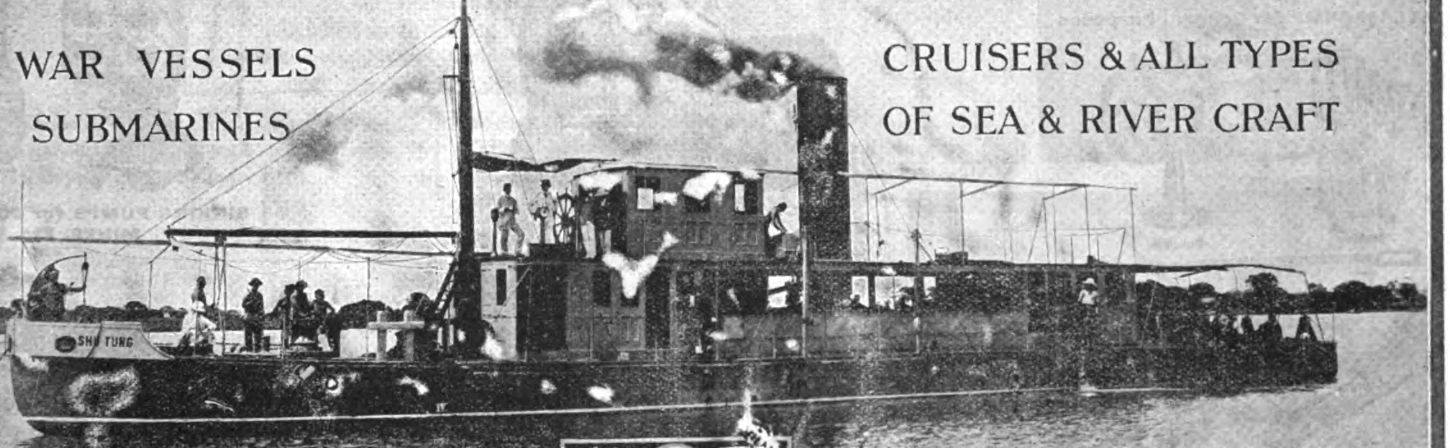

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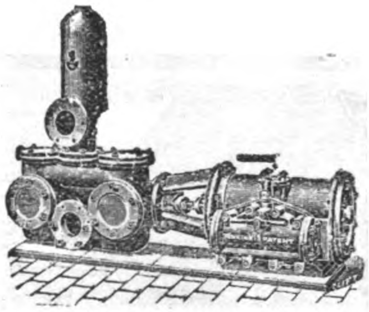

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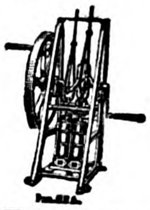

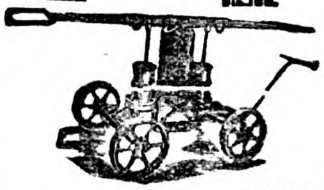

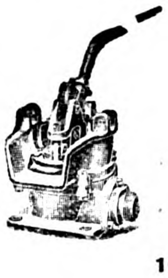

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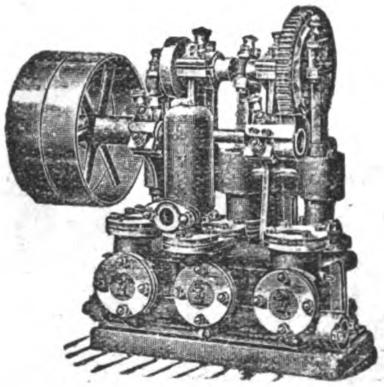
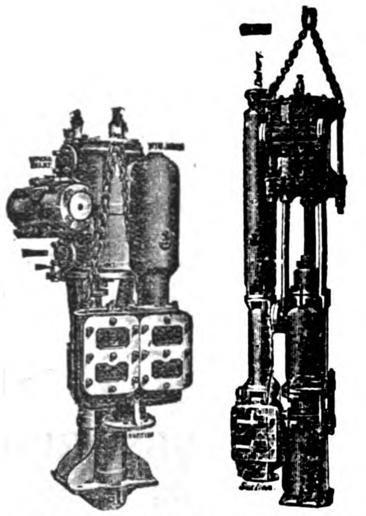
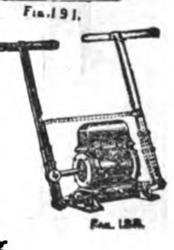




SINKING PUMPS for COLLIERIES, MINES, Etc.

Fig. 191.



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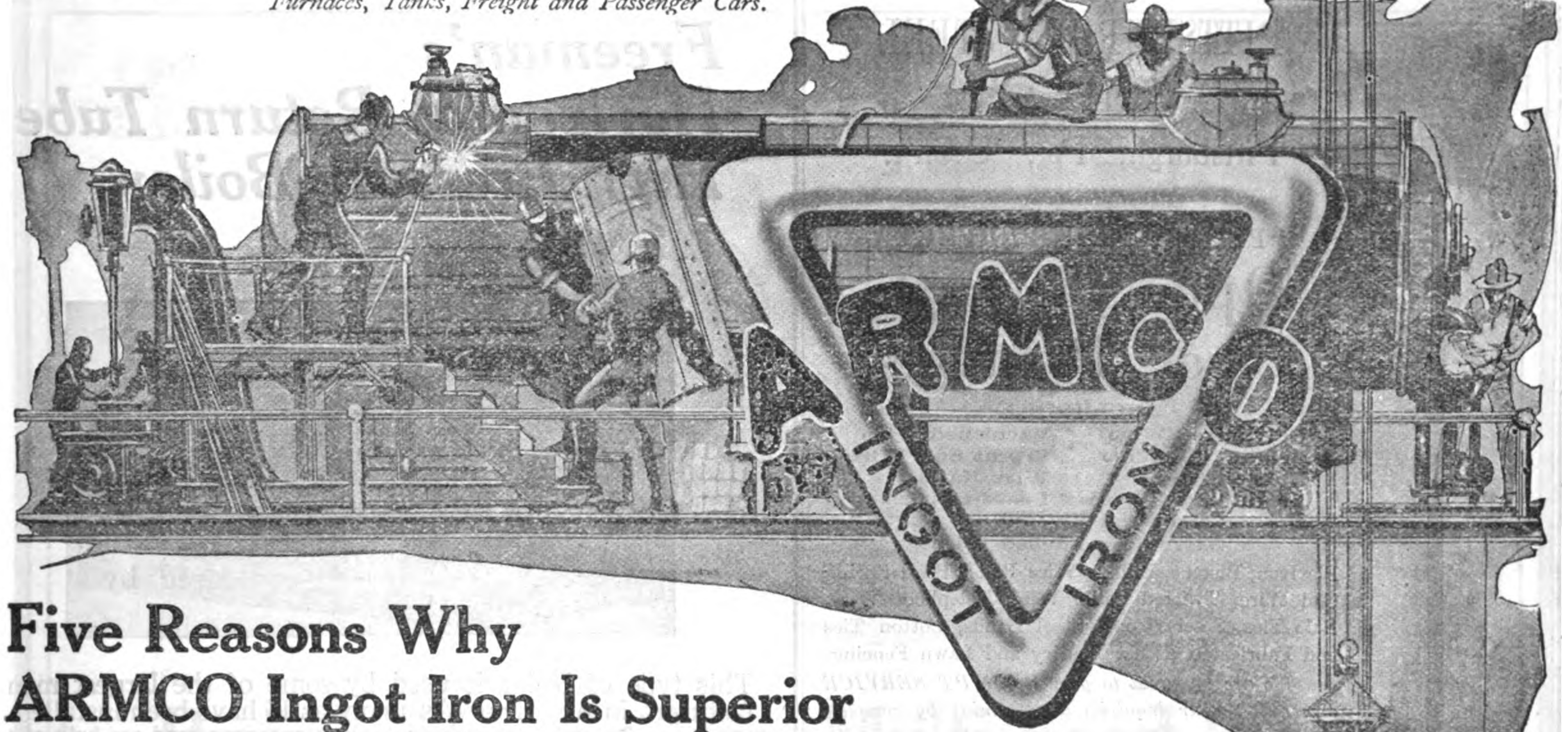

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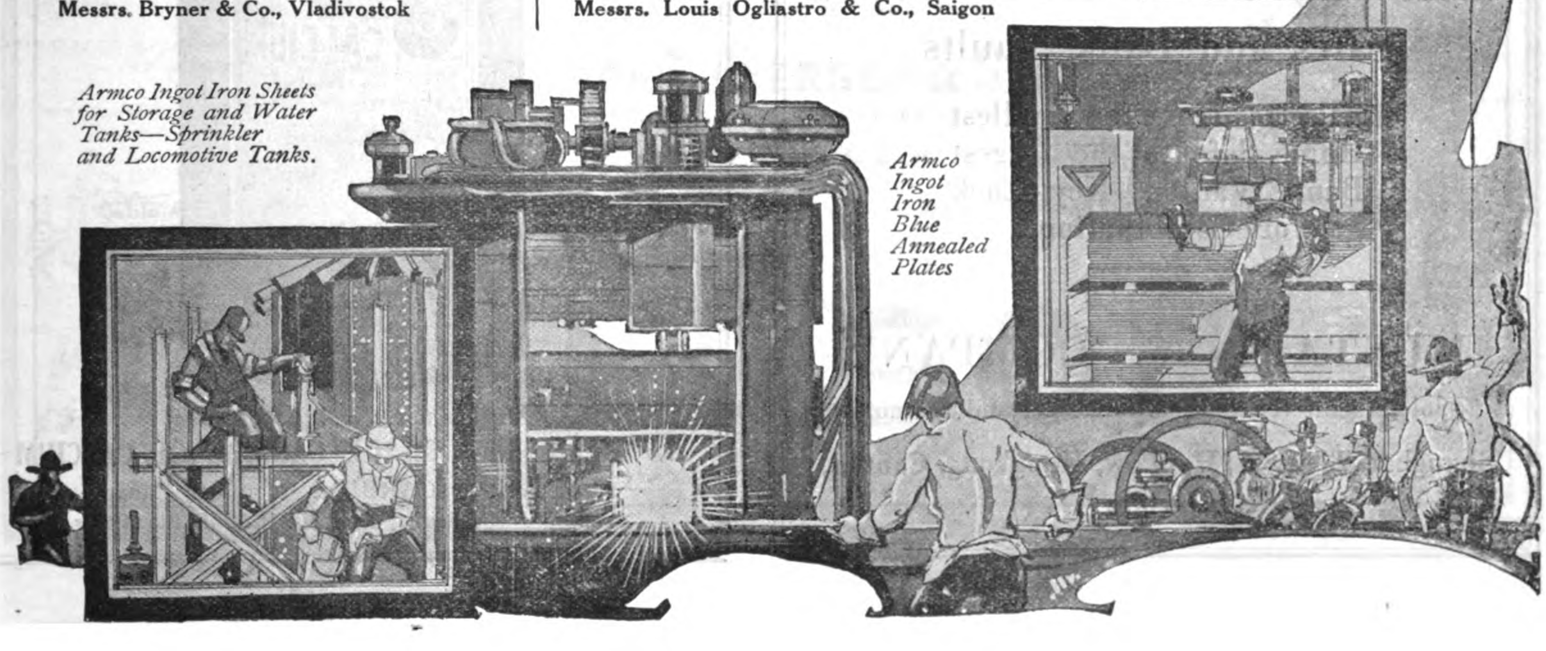

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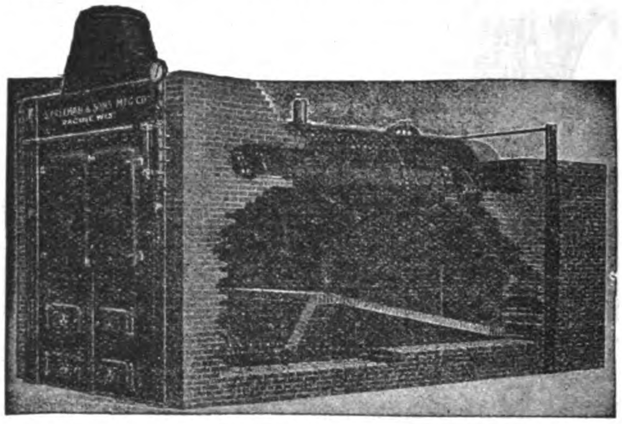

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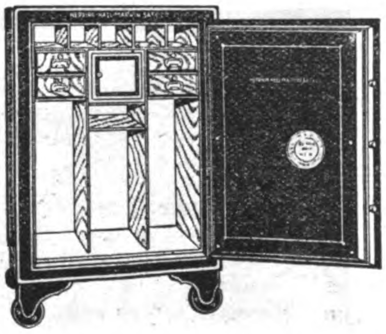

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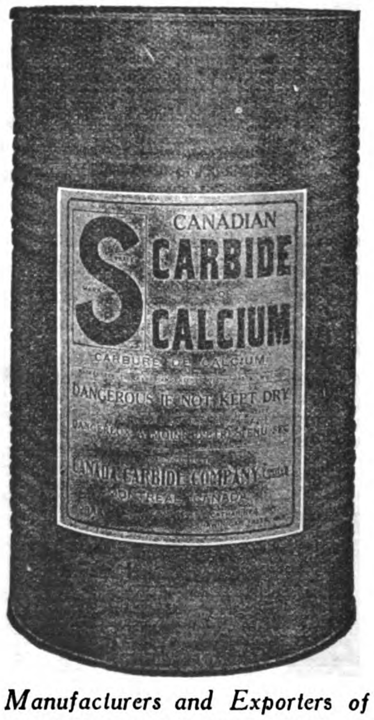

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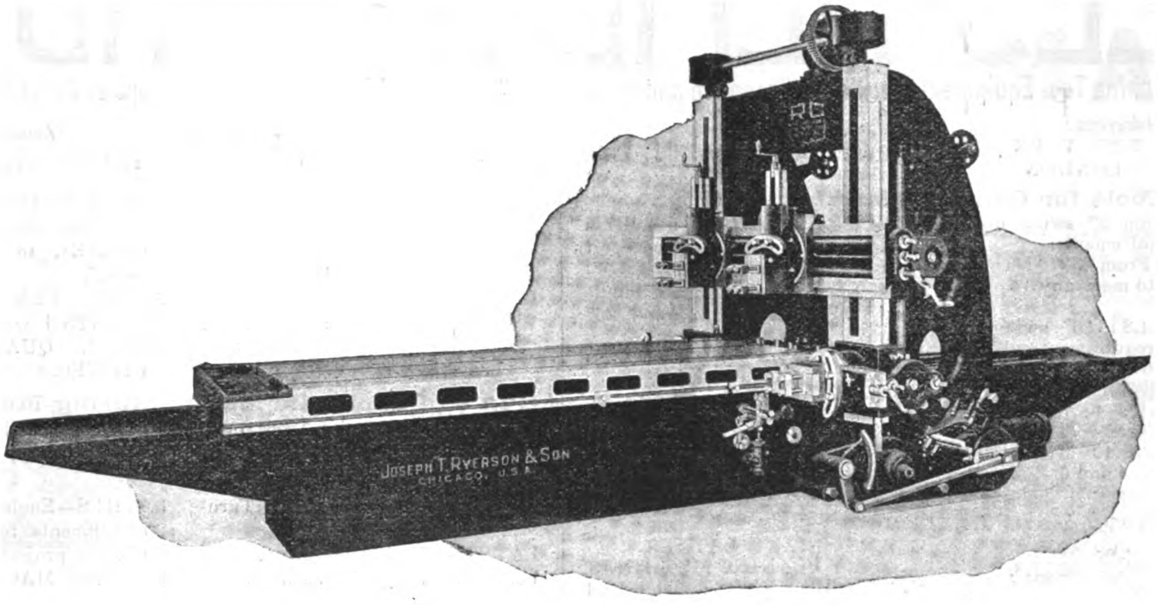

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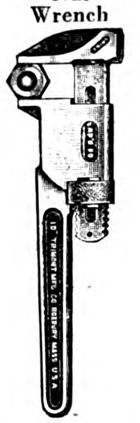

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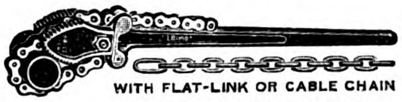

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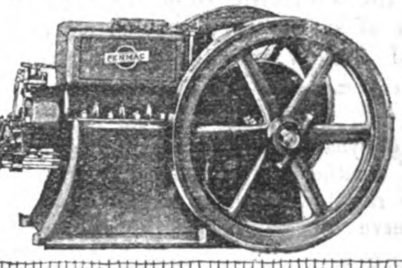

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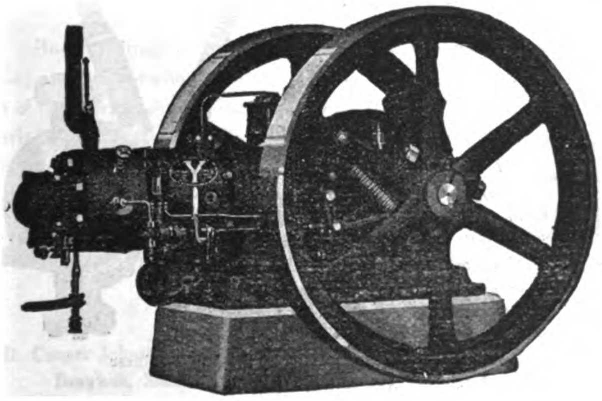

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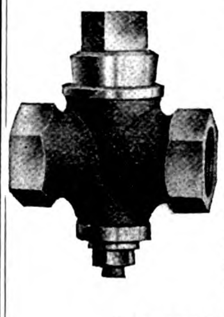

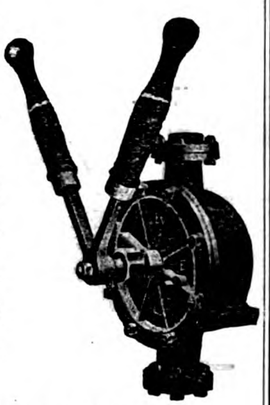

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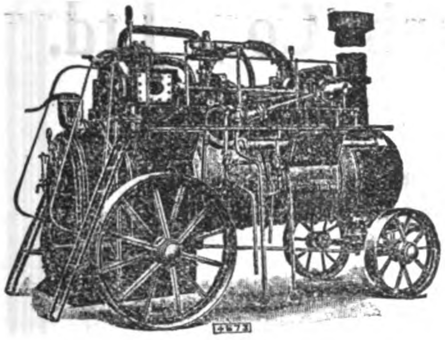

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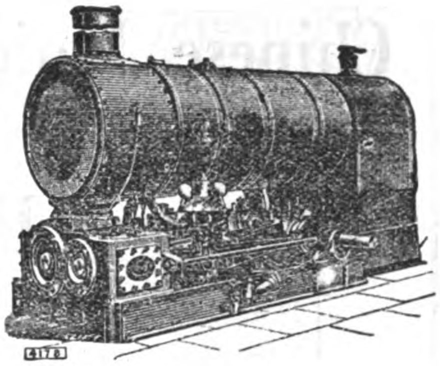

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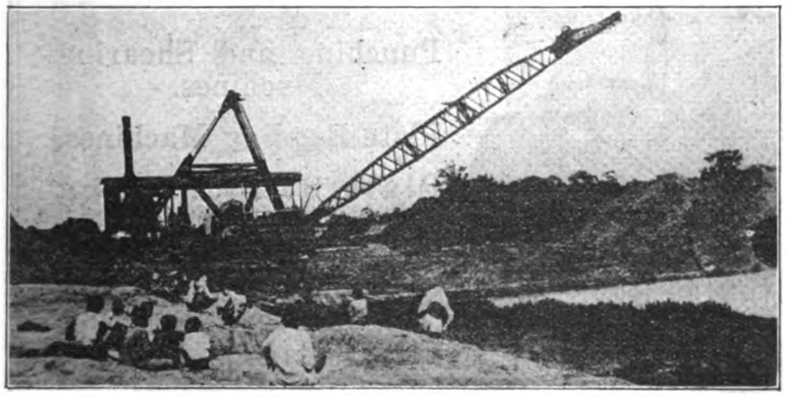

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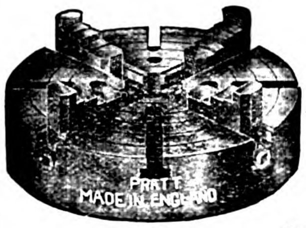

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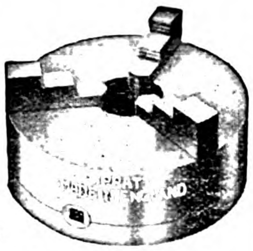

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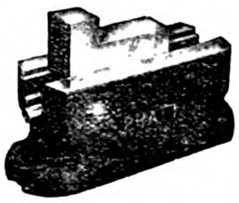

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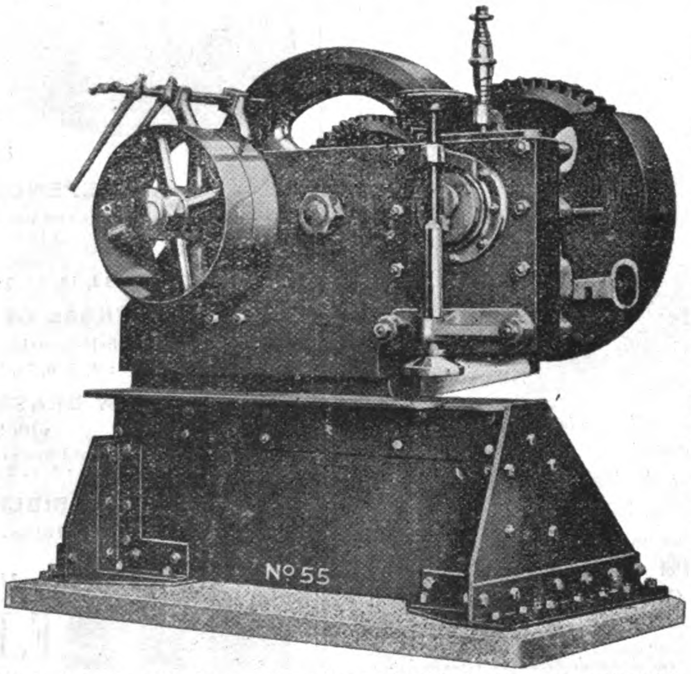

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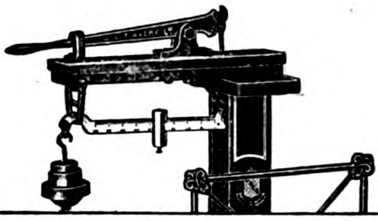

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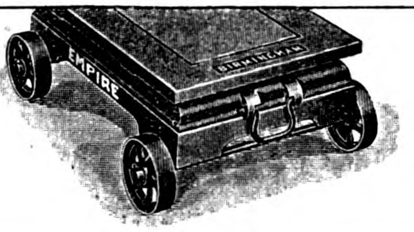

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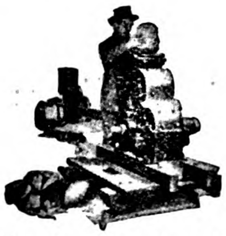

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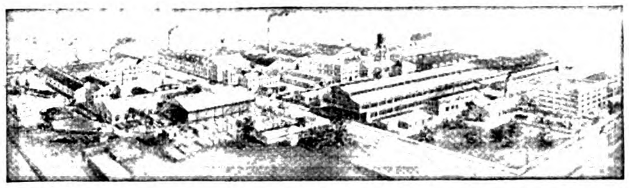

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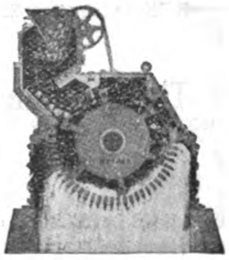

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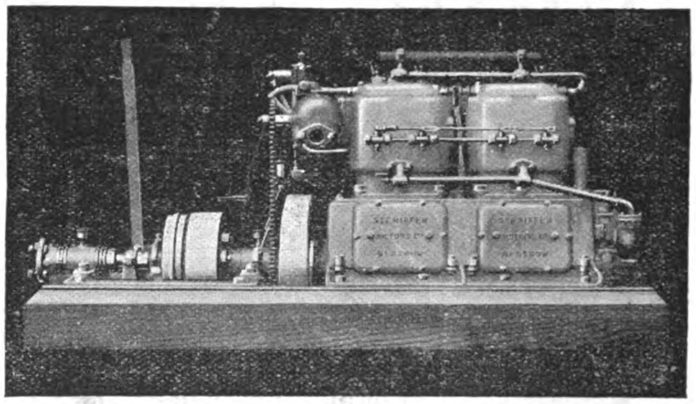

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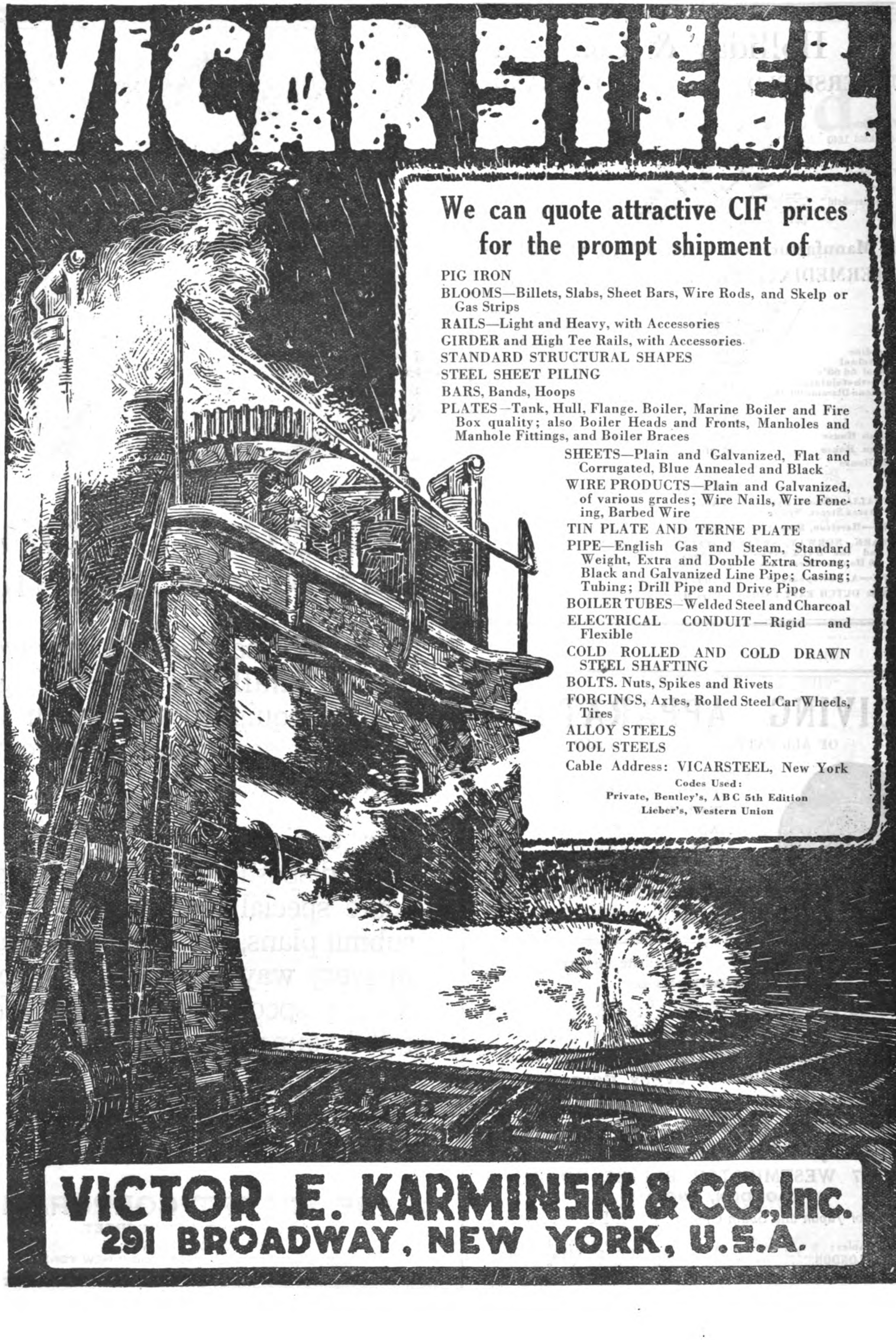
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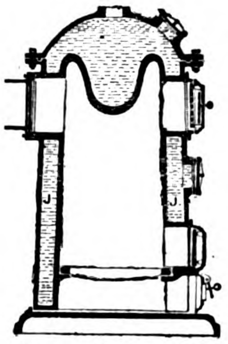

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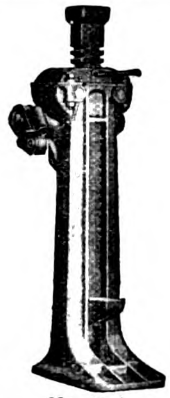

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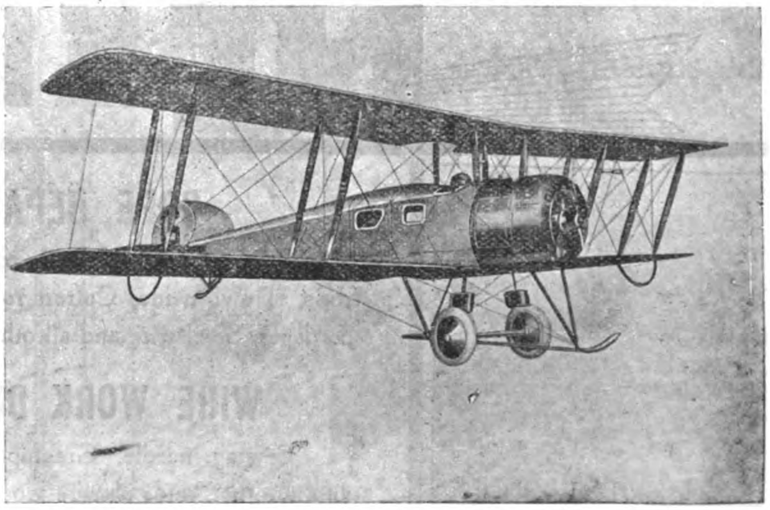

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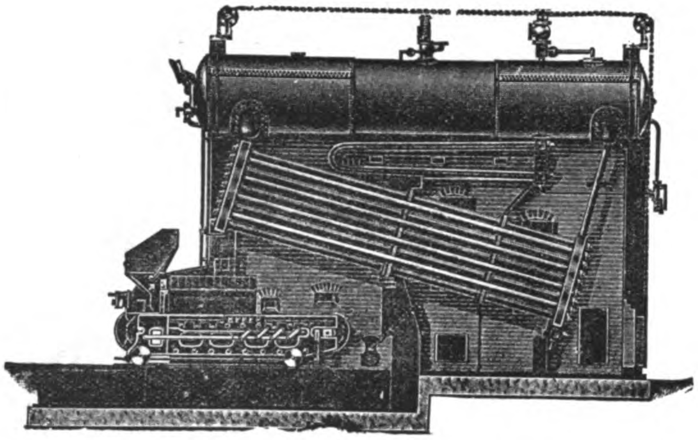

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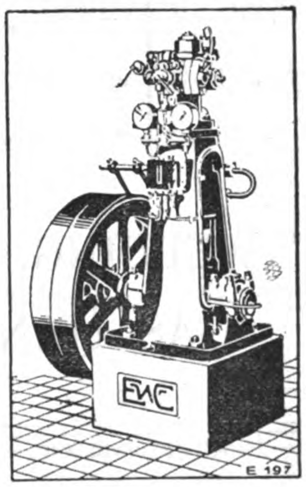

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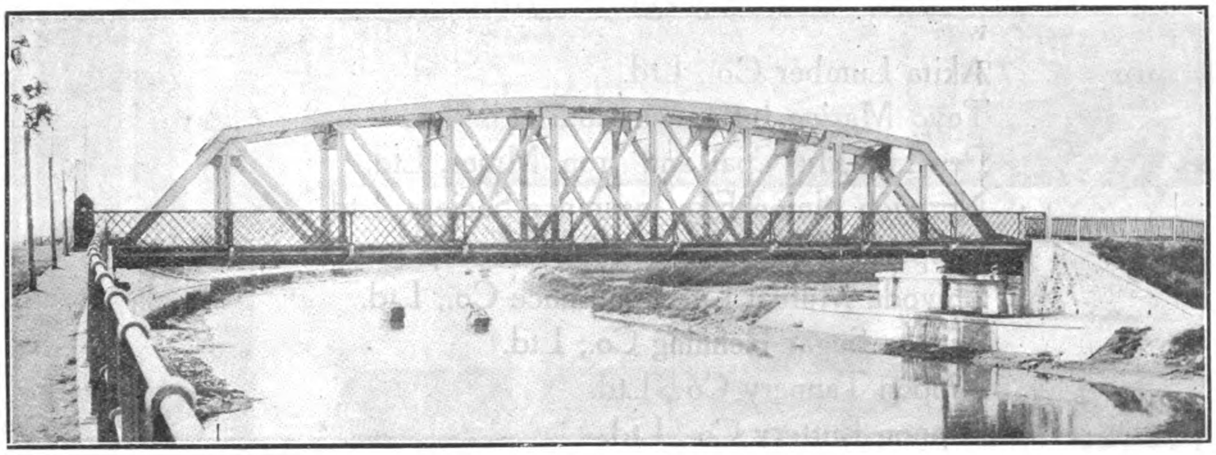

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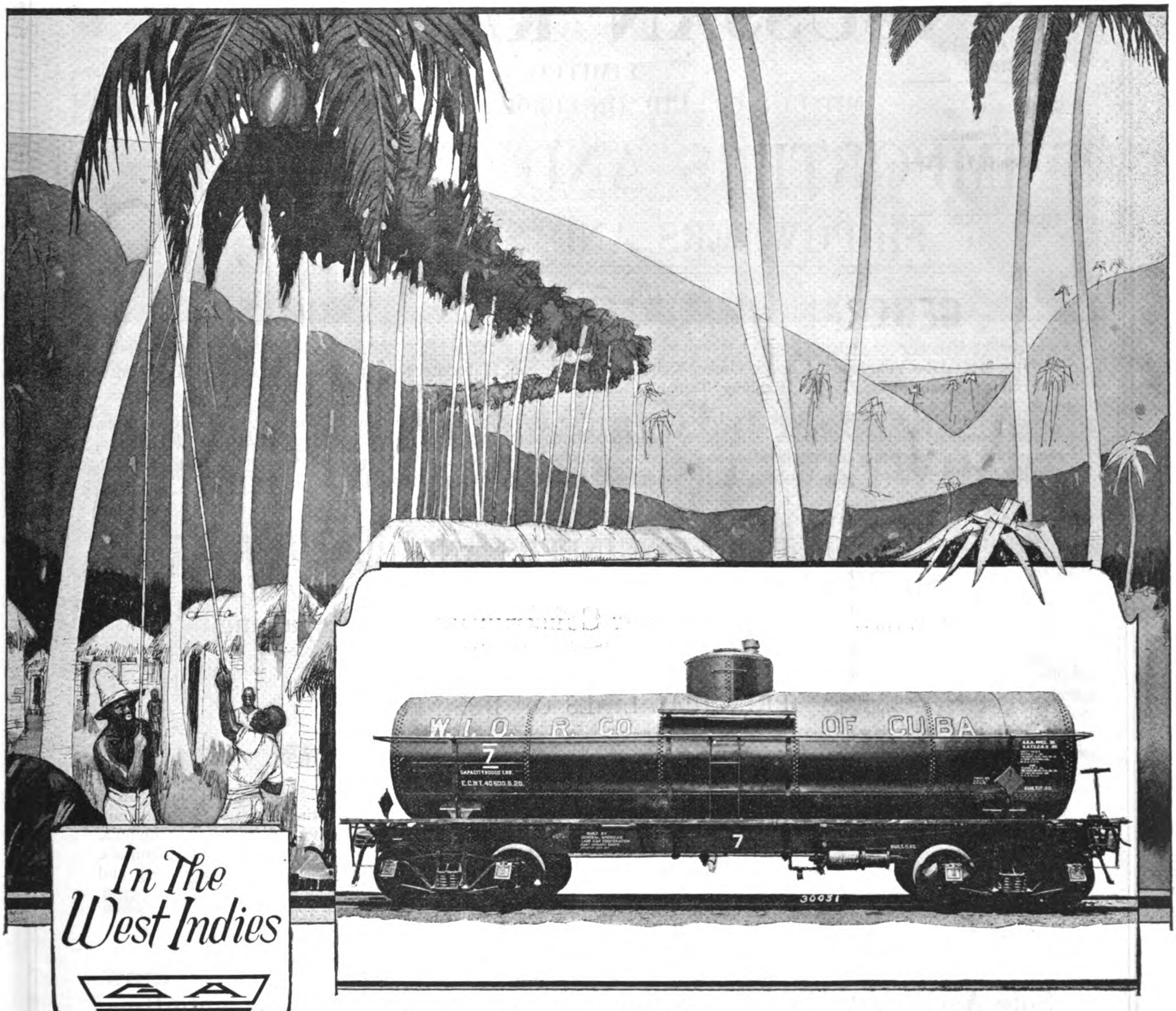

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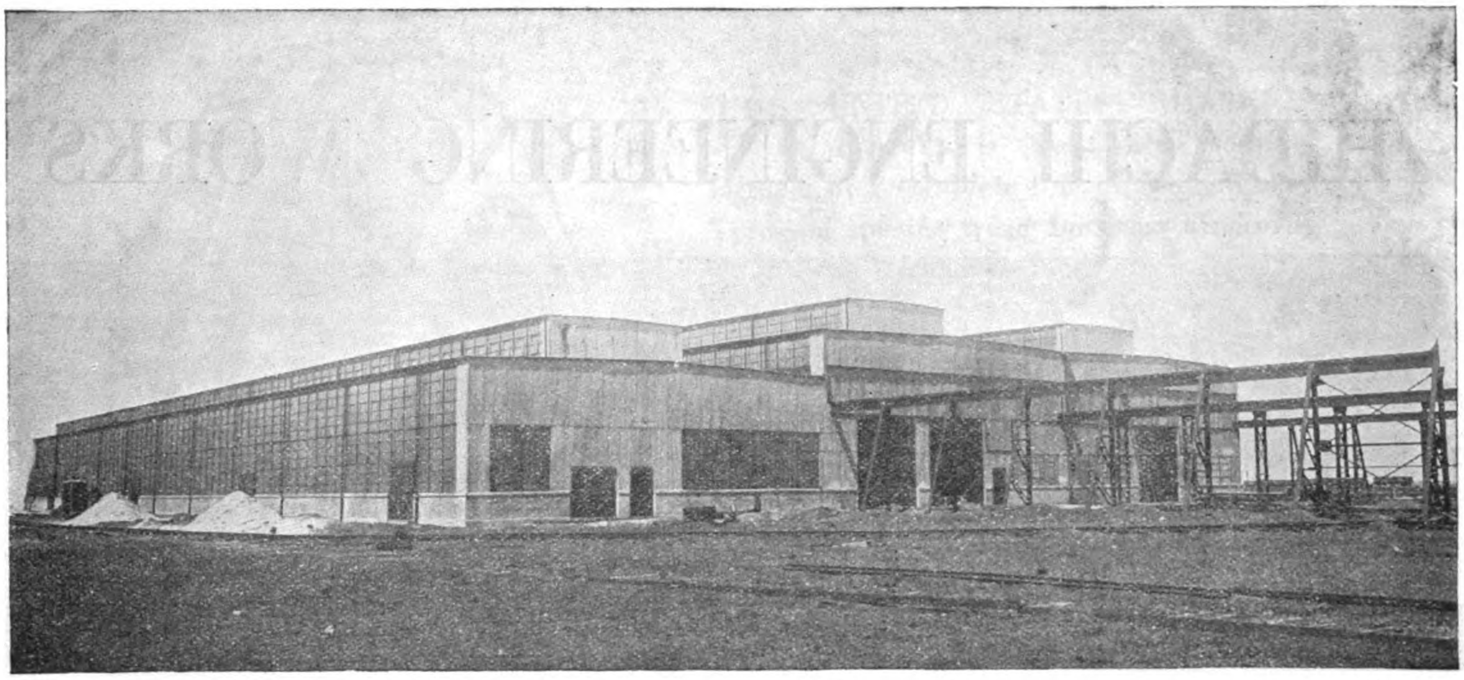

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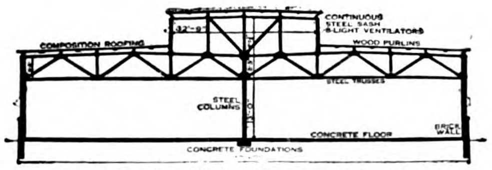

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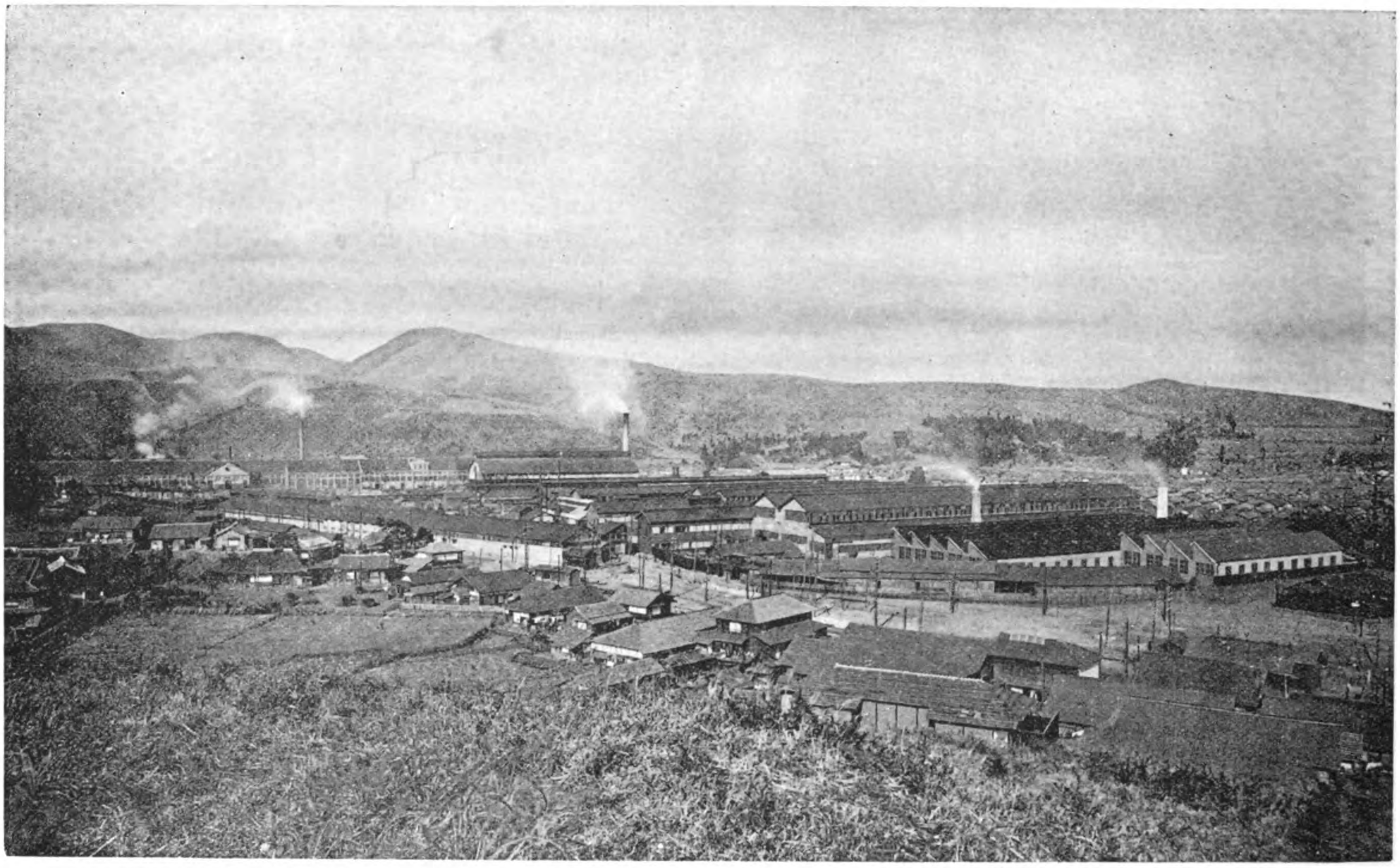

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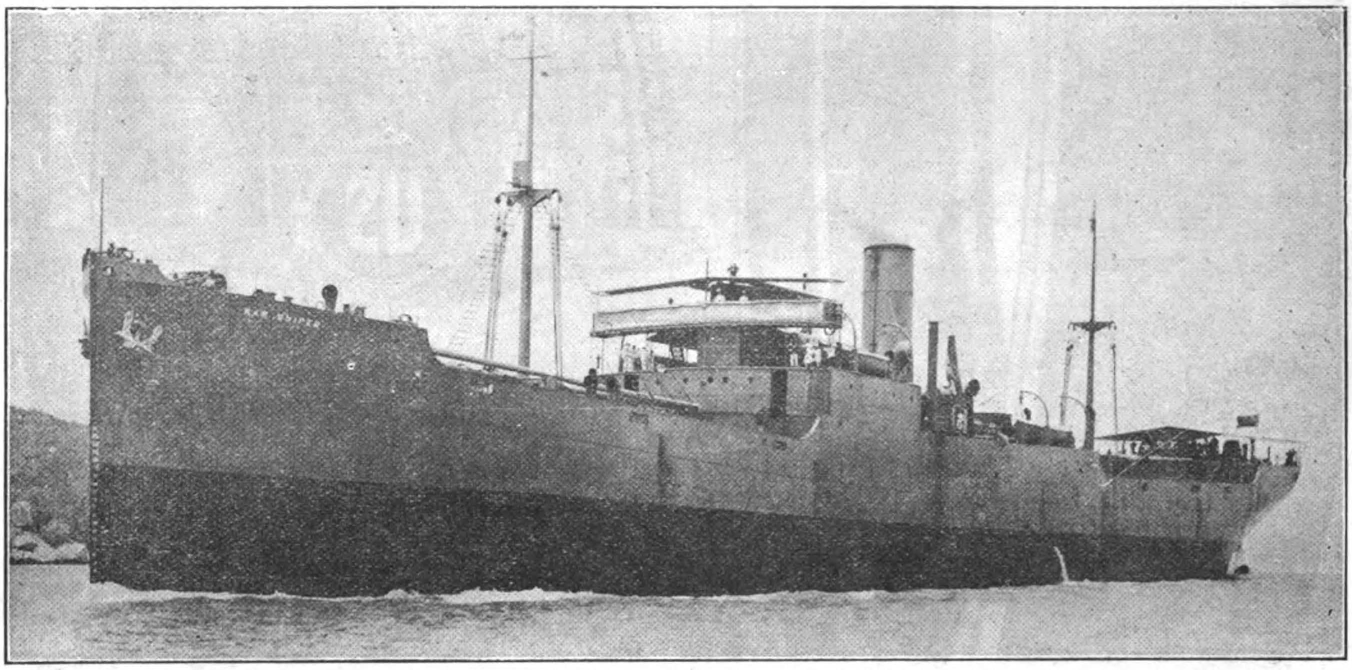

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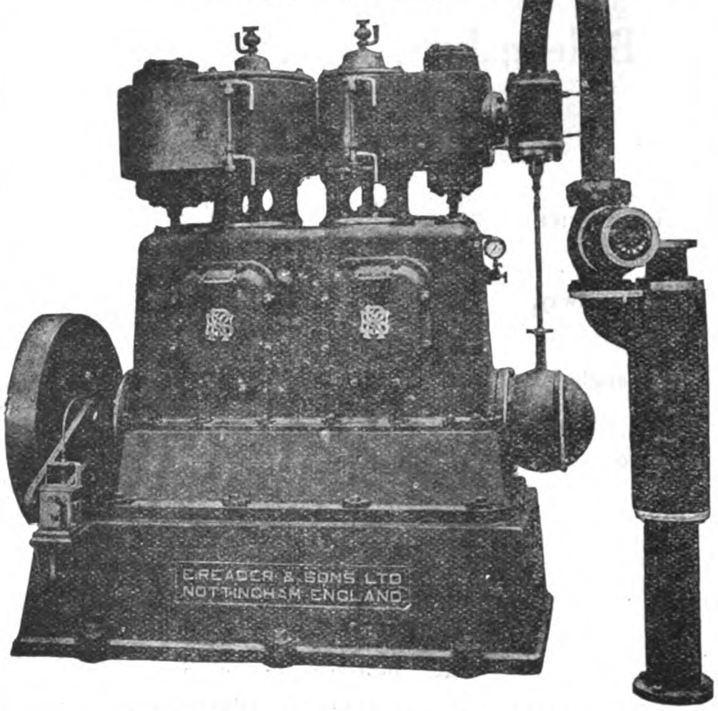

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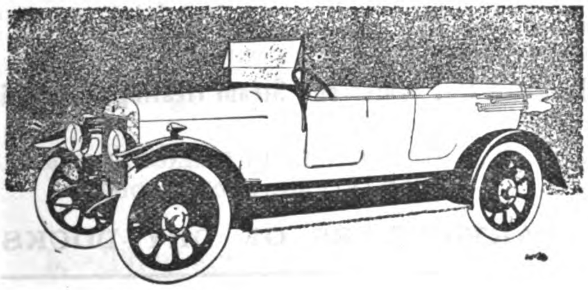

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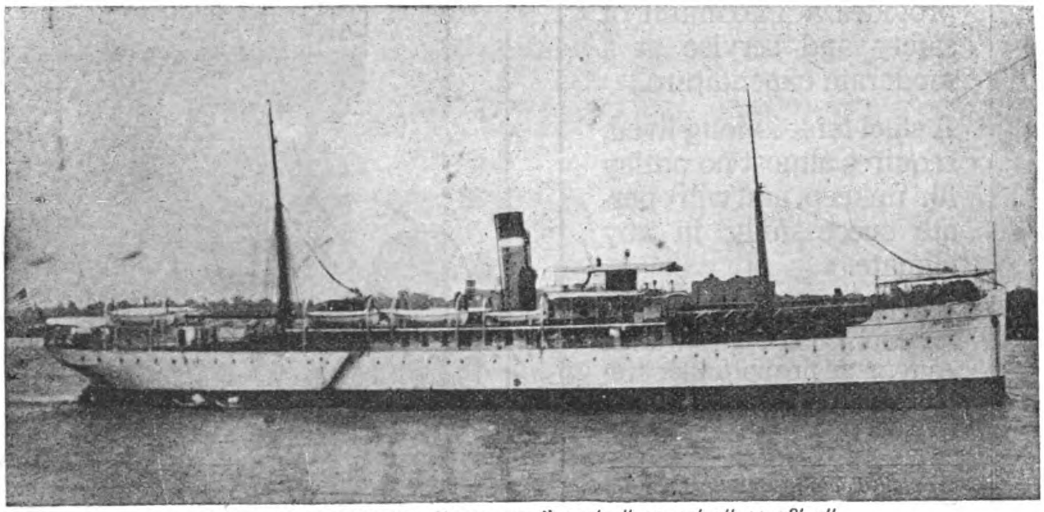

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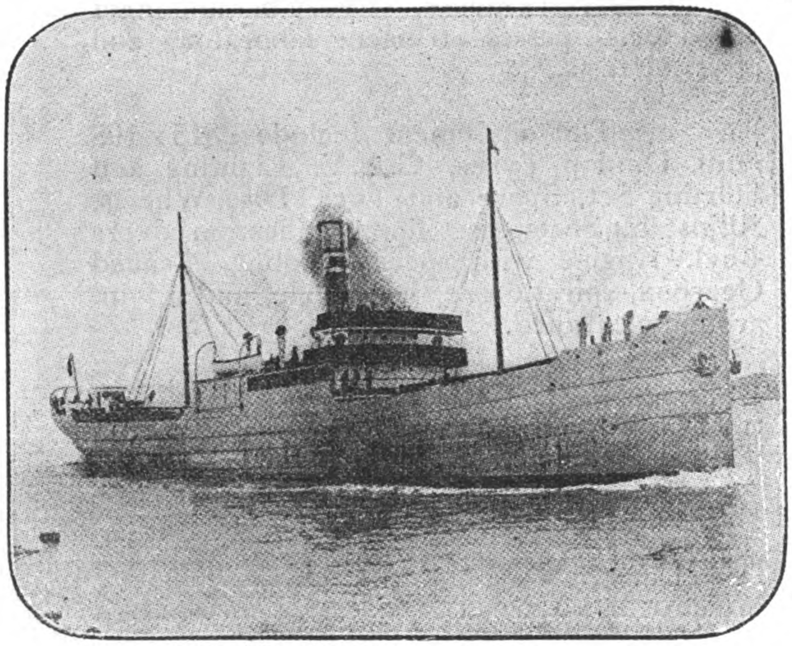

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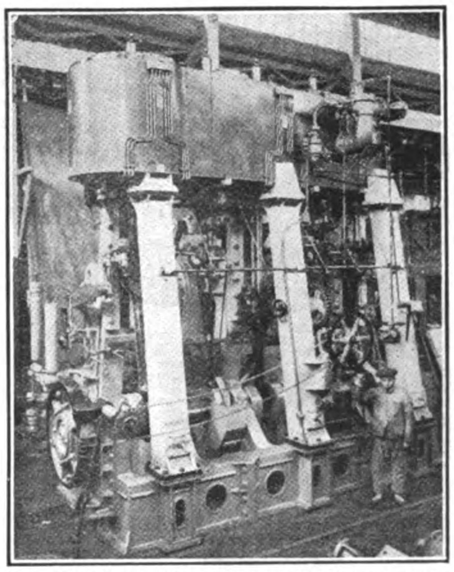

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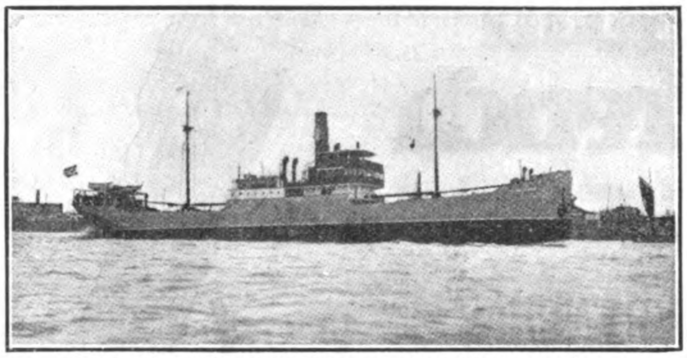

S.S. "Halvdan," one of 8 Steamers Built and Engined at Works

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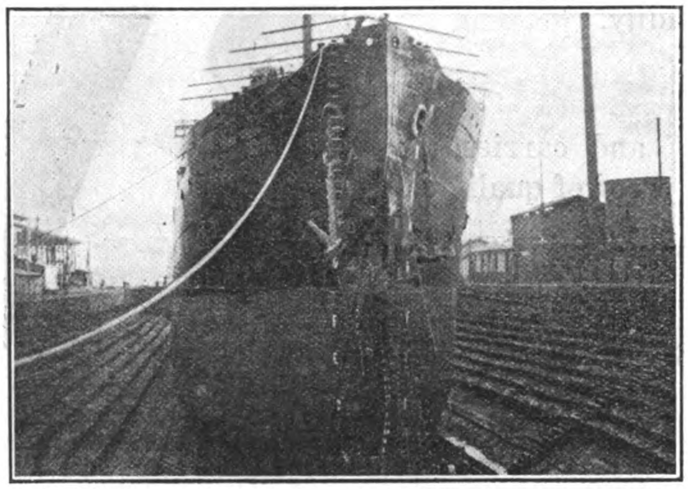

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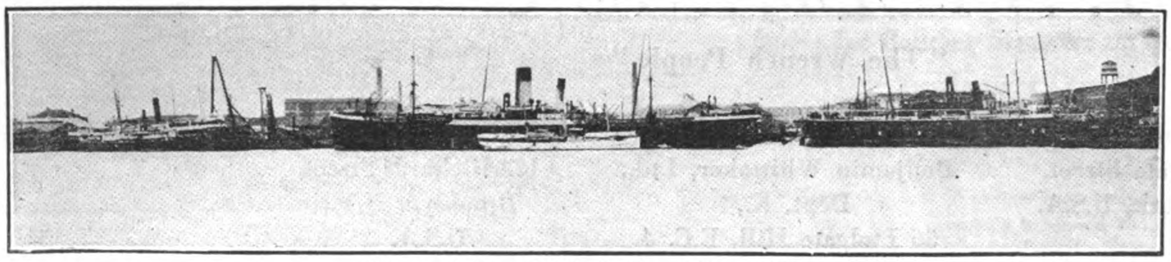
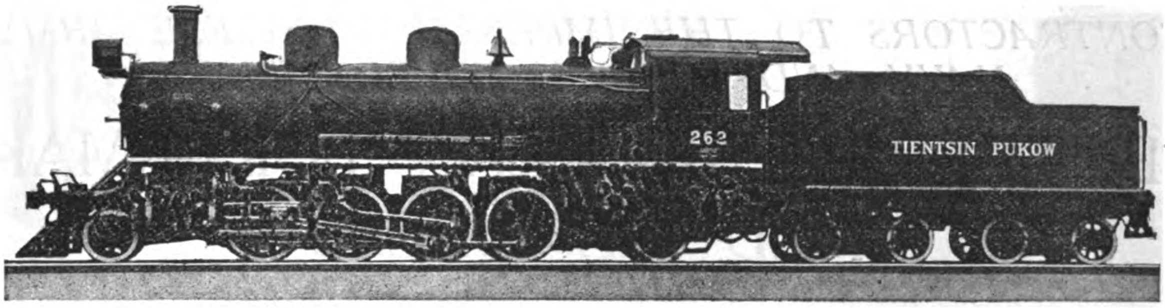


General View of Works from River Side

Showing 8 Steamers Berthed Alongside Undergoing Repairs.

NEW POWER



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The distance from the central station at Tientsin to Pukow is 627 miles. In addition there are branches to mines and canals amounting to 60 miles.

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DREDGES OF ALL KINDS
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DRY DOCKS: No. 1, 500-ft. long; 70-ft. wide; 35-ft. deep.
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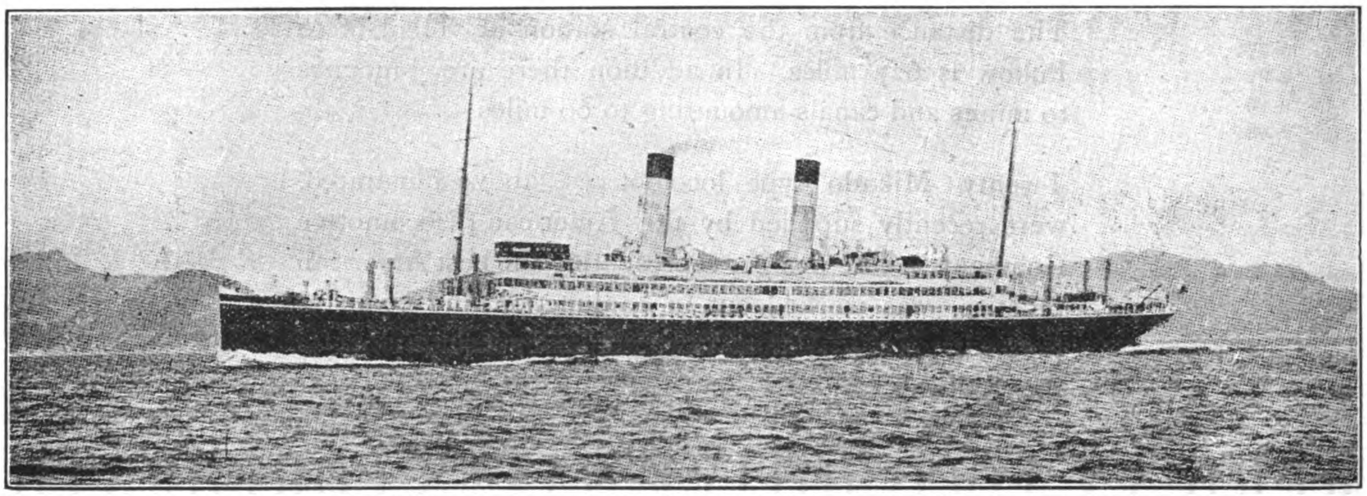

The *Tenyo Maru*, built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

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Extreme Length	523	Ft.	371	Ft.	728.9	Ft.
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Width of Entrance on Top	89	„	66	„	99½	„
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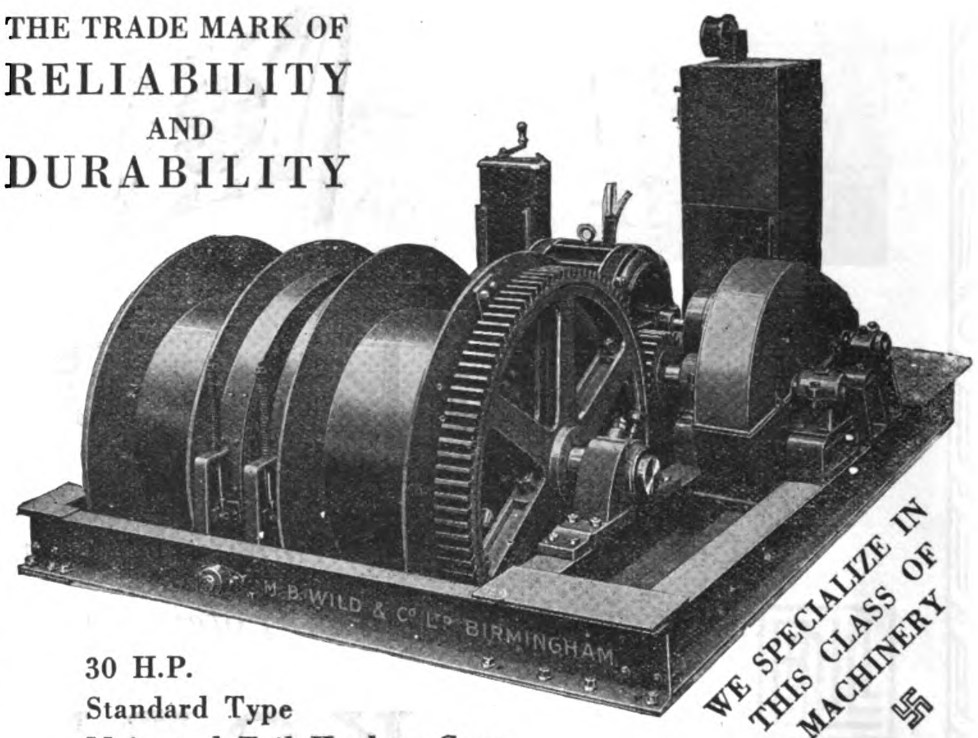

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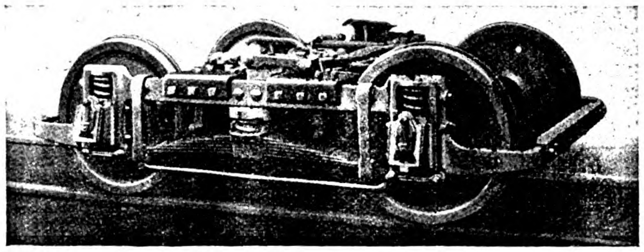

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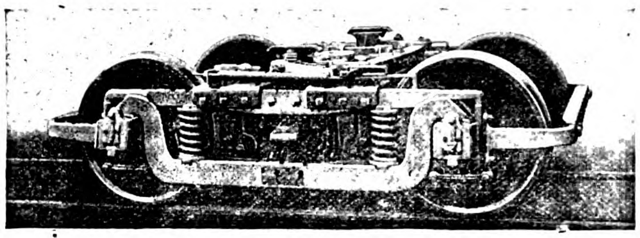

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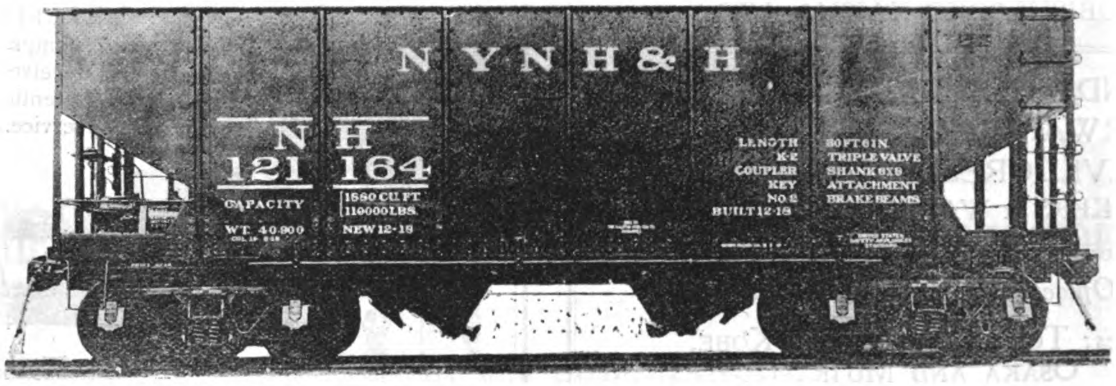

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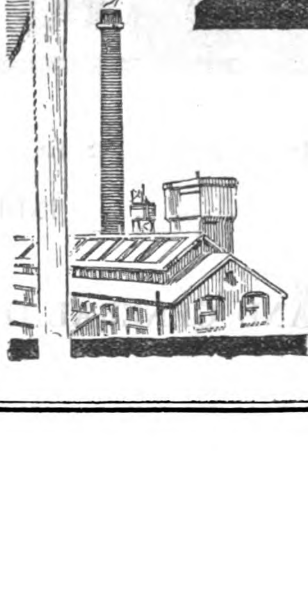

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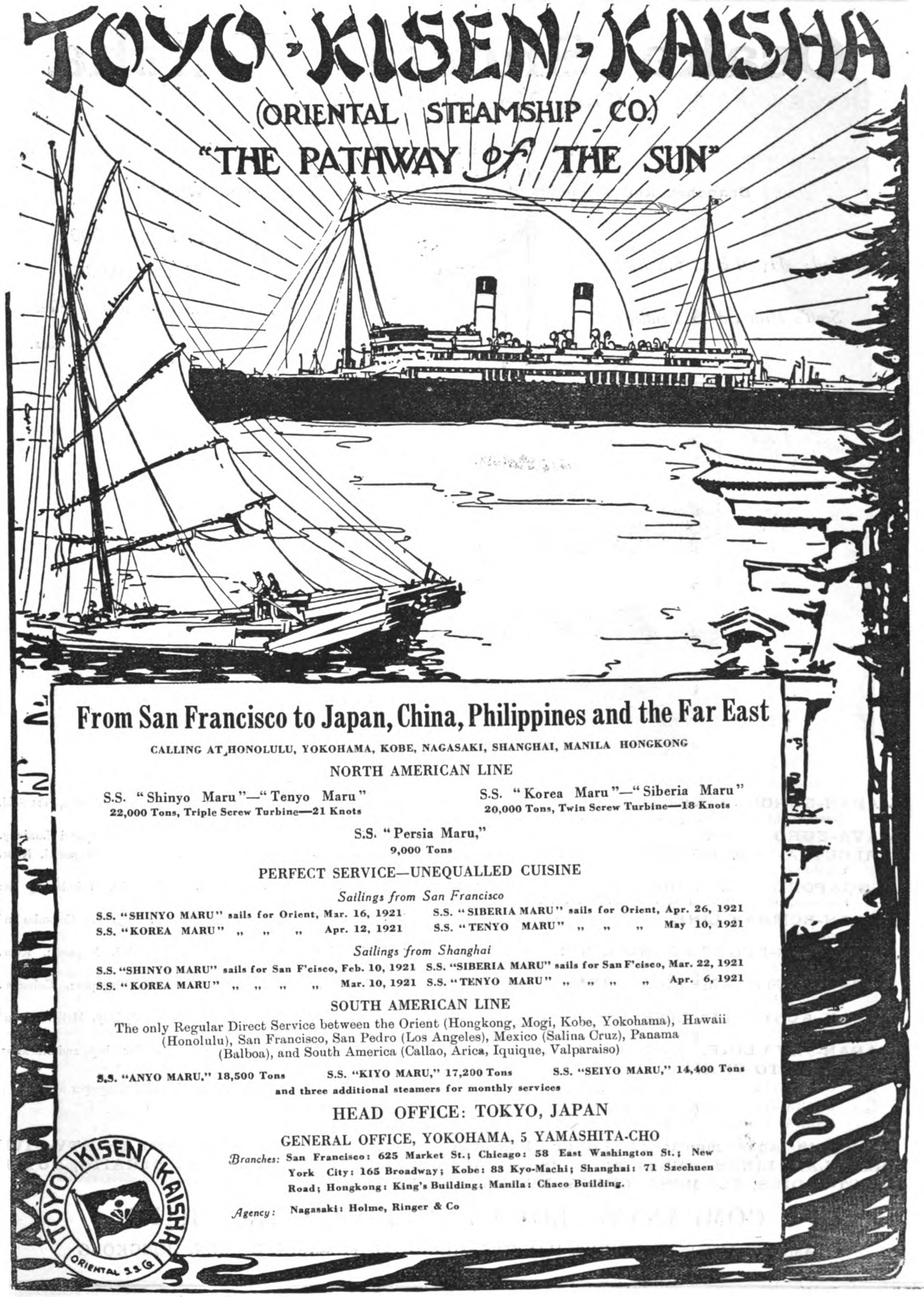
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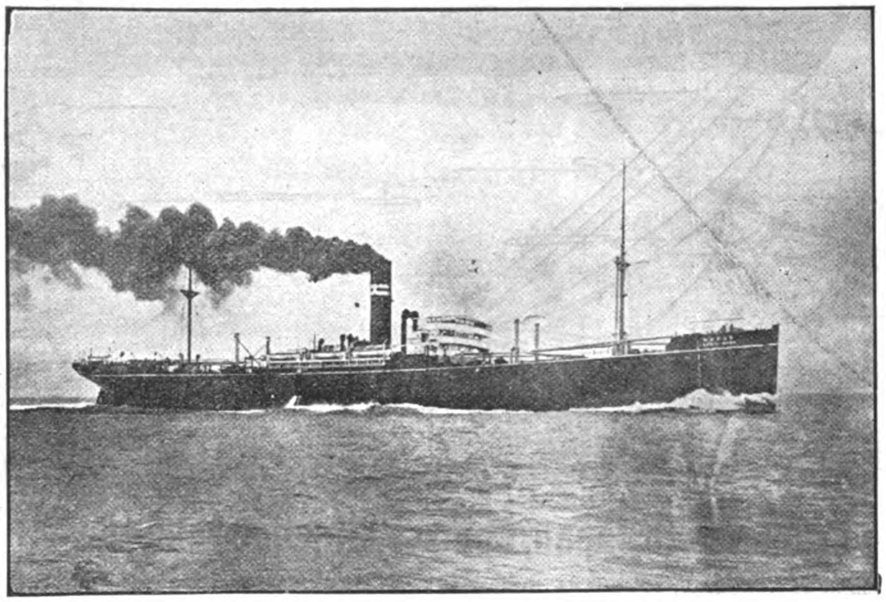

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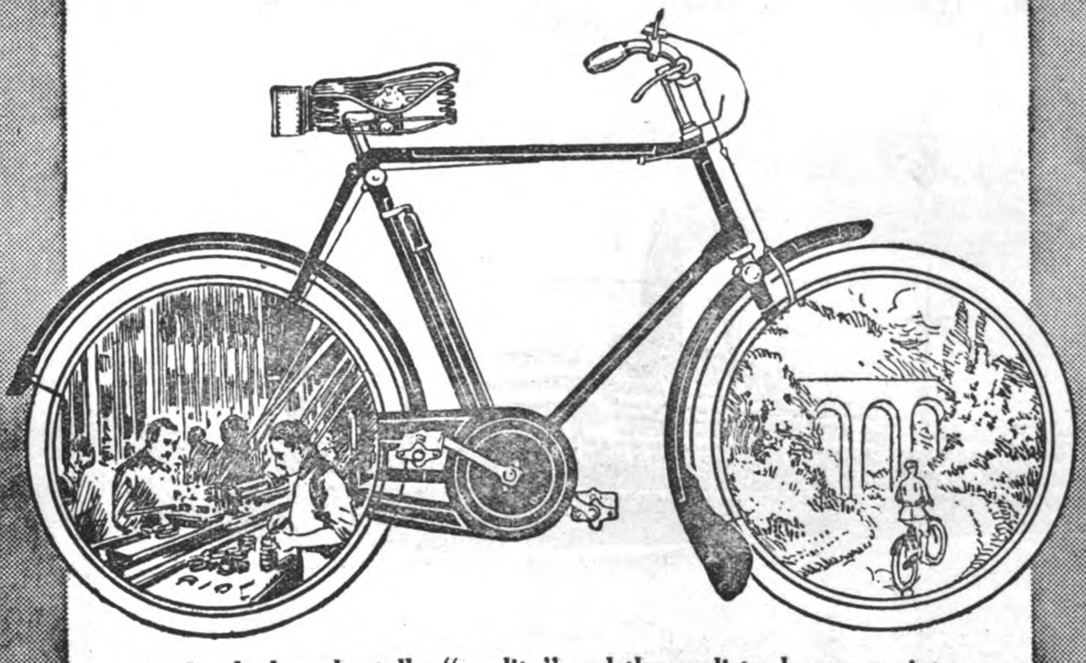

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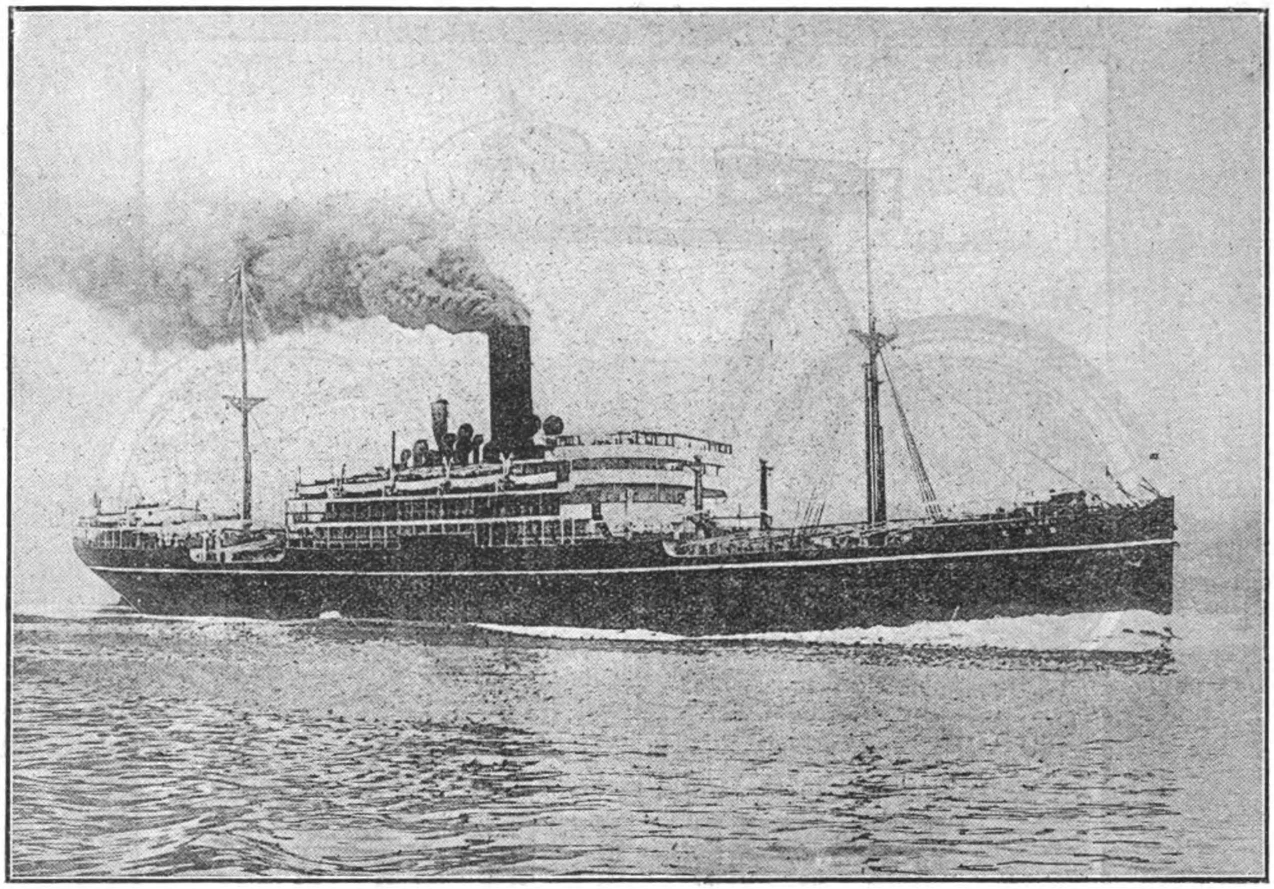

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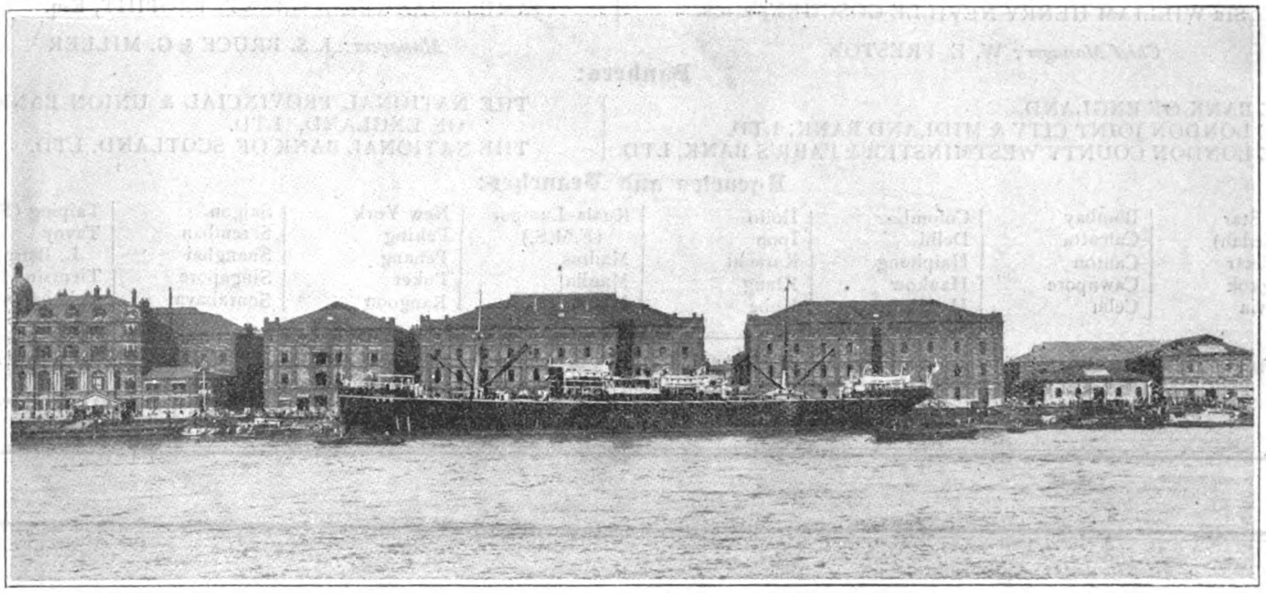

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVII SHANGHAI, FEBRUARY, 1921 No. 2

SHANTUNG, 1921

Actual Conditions in the Leased Territory of Kiaochau

By George Bronson Rea

EXACT knowledge of actual conditions in the leased territory of Kiaochau, and in the province of Shantung, is of primary importance to American and European firms engaged in the China trade. Consequently, this issue of THE FAR EASTERN REVIEW is devoted wholly to matters of fact in Shantung.

The writer has made a personal investigation of the most widely discussed Chinese province with the object of seeing conditions as they are and presenting them without fear or favor. The result is embodied in the series of illustrated articles appearing in these pages. Every facility for investigation was furnished willingly and no disposition was disclosed of any desire for special pleading from any quarter whatsoever. As will be seen, many of the facts are both surprising and interesting.

For instance, it is not generally understood that industrial enterprises within the Leased Territory of Kiaochou are favored and assisted by the Ordinance of December 2, 1905, under which machinery, tools, and implements required for manufacturing, industrial and agricultural purposes, are imported free of duty, while articles manufactured within the Territory are exempt from duty except in so far as China is entitled to duty on the raw materials. The Japanese saw the advantage of this ruling, peculiar to Tsingtau, and encouraged the establishment of new industries by providing factory sites at extremely low costs, and by adopting the general principle on the Shantung Railway that raw materials from the interior for factories within the Leased Territory shall be given as low freight rates as is consistent with the profitable working of the line. These advantages are open to all alike.

In a public address on October 1, 1917, at the time of the installation of the civil administration, Dr. M. Akiyama, chief civil administrator, expressed the hope that Americans, Europeans, Chinese and Japanese would unite their endeavors in developing the industries and commerce of Tsingtau, thus promoting their individual interests and the common good of all friendly nations. Publicly and privately, men at the head of affairs in the Leased Territory have welcomed the enterprise and capital of all friendly nations to assist in the development of the port.

This expresses the fundamental policy of Japan in Kiaochou and, as far as I have been able to learn, Japan has lived up to this policy. There may exist in the secret archives of American and European chancellories, documents and reports that prove the contrary, but in the main, these have originated from sources outside the Tsingtau district. As far as Americans are concerned, it may be said that the American consulate at Tsingtau remains in blissful ignorance of any specific instance of unfair discrimination against American interests.

GENERAL M. YUI

The Fourth Military Governor of the Leased Territory of Kiaochau. A Japanese General of the Old School, with Pronounced Liberal Tendencies and Ideas. Under his Administration, the Firm Hand of the Military has been Relaxed, and the Actual Work of Government Carried Out by a Civil Organization. He is Very Pro-Chinese.

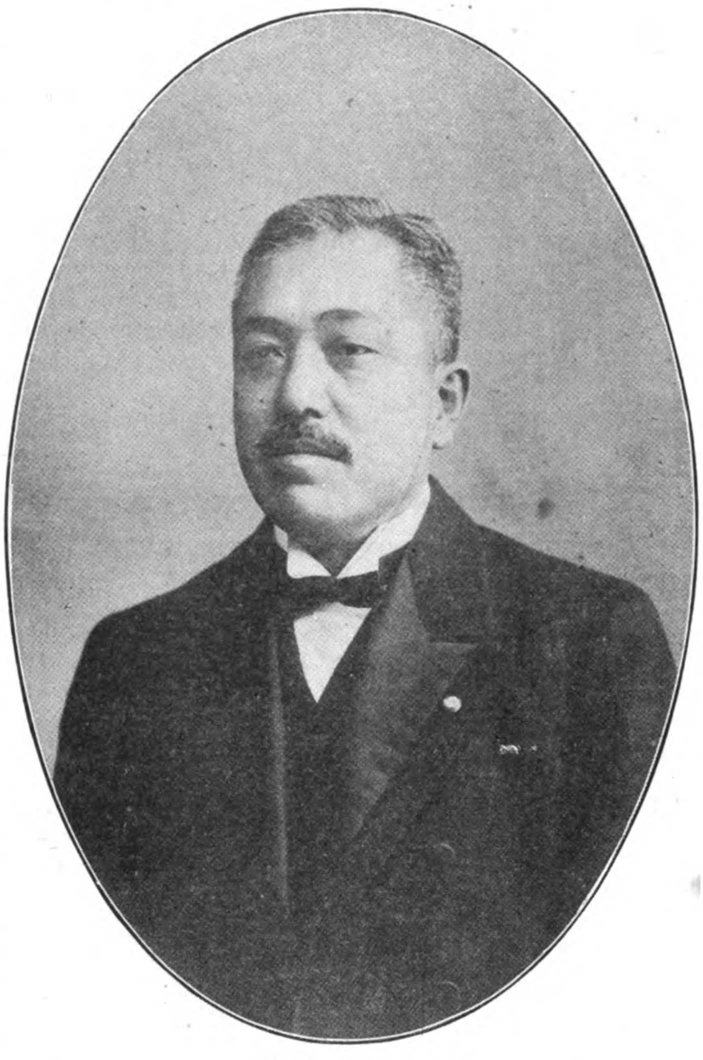
Actual Origin of Suspicion

Investigation on the ground tends to prove that the many criticisms of Japan's activities in Tsingtau owe their origin to the petty officiousness of subordinate government employees, who either abuse or misuse their authority, or are so rigidly bound by bureaucratic red tape that they have lost the capacity to act for themselves in an emergency and dare not decide any minor question not provided for in their instructions. The foreign merchant who has the energy to rise above these petty obstacles and present his case to some superior official invariably receives prompt and courteous attention. Such method, however, require considerable moral courage, involving as it does, a reprimand to the subordinate from his superior, and thereby engendering a feeling of spite which finds expression in further petty difficulties for the independent foreigner. This is human nature, true to life the world over. Add to this the racial and commercial differences which undoubtedly exist to complicate the situation, and it can be readily understood how minor incidents which pass unnoticed in any other part of the world are

here magnified into international questions and made to appear as part of a set policy on the part of the Japanese authorities to discriminate against foreigners. Japan's great trade expansion during the war absorbed many of her best and most promising young men, leaving the civil service to be filled by men not so well equipped with experience in treating with foreigners. Under such conditions, it is only natural that some misunderstandings occurred, and it is to the credit of the higher officials that they are invariably disposed to settle equitably any difficulty that may arise. If the foreign merchant will be willing to exert himself and fight against these conditions by taking his troubles to the proper authorities, he will in time win out and pave the way to a profitable business.

The average foreign merchant in Shanghai and elsewhere takes it for granted that all stories about Japanese discriminatory methods are true to fact, and they are disinclined to enter the commercial struggle by establishing a branch office in Chinese territory under control of Japan. A little of the same nerve and enterprise displayed in opening markets in other places and in fighting local conditions, if applied to Tsingtau and Shantung, would bring success. Despite all the charges of discrimination in favor of Japanese and unfair practices, the leading foreign firm in Tsingtau is capturing the major portion of the business in which it is interested.

Minor incidents have undoubtedly occurred to try the patience of the foreign merchant, but these cannot fairly be made to serve as a blanket indictment against the good faith of the Japanese government. As an example of these occurences, I was told that a foreign trader in Tsingtau was certain that he had been unfairly treated in the allocation of freight cars to ship his goods from Tsinanfu to the seaport. It appears that a Japanese freight broker at the provincial capital had obtained cars from the railway authorities when he had nothing to ship, and cars were refused the foreigner whose shipments were awaiting transport. The latter was, therefore, compelled to contract for his cars with the Japanese broker and pay a higher rate than the official tariff. This instance was not cited as a general practice, but as an isolated case, yet it is a matter of record that it has been employed as convincing proof that "the railway was discriminating against foreigners in favor of Japanese." Let us assume that it was. Then let us turn to the Chinese-managed Tientsin-Pukow railway which also passes through Tsinanfu, and we find that all freight on this line has to pass through the hands of Chinese forwarding companies or freight brokers, and next let us look at the empty freight cars that clutter the sidings at the provincial capitals and other centres where they are held by the Tuchuns for their own purposes, or are peddled out to shippers at excessive rates. It will also recur at once to our mind that freight and forwarding agencies are considered quite legitimate in America and elsewhere. It very often occurs that the freight broker will contract for all the cargo space in a steamer when he has absolutely nothing in sight to fill it with, and then run his chances in obtaining shipments. It is also true that it frequently happens that the shipper will have to pay a much higher rate to the broker than he would to the steamship company direct. The system is quite legitimate in America. Yet when an isolated instance crops up in Shantung where a Japanese freight broker is allocated cars at a time when a foreigner has freight to ship over the railway, the incident is cited as conclusive proof of Japanese discrimination. It is not even alleged that such practices are general, or that they occur at the Tsingtau end of the railway, nor is it said that the incident took place before the installation of the civil administration, one of whose first step was to prohibit the allocation of freight cars to brokers. Whatever may have been the case during the early days of the Japanese military occupation of the railway, conditions at present favor the foreign shipper more than the Japanese. Some foreign firms make a practice of unduly overloading their cars and have escaped payment of excess freight charges in order to avoid any possibility of a misundertanding. Claims for loss and breakage are met promptly, even to small items of a dollar or less, while if a Japanese shipper oversteps the rules, he has to pay for it.

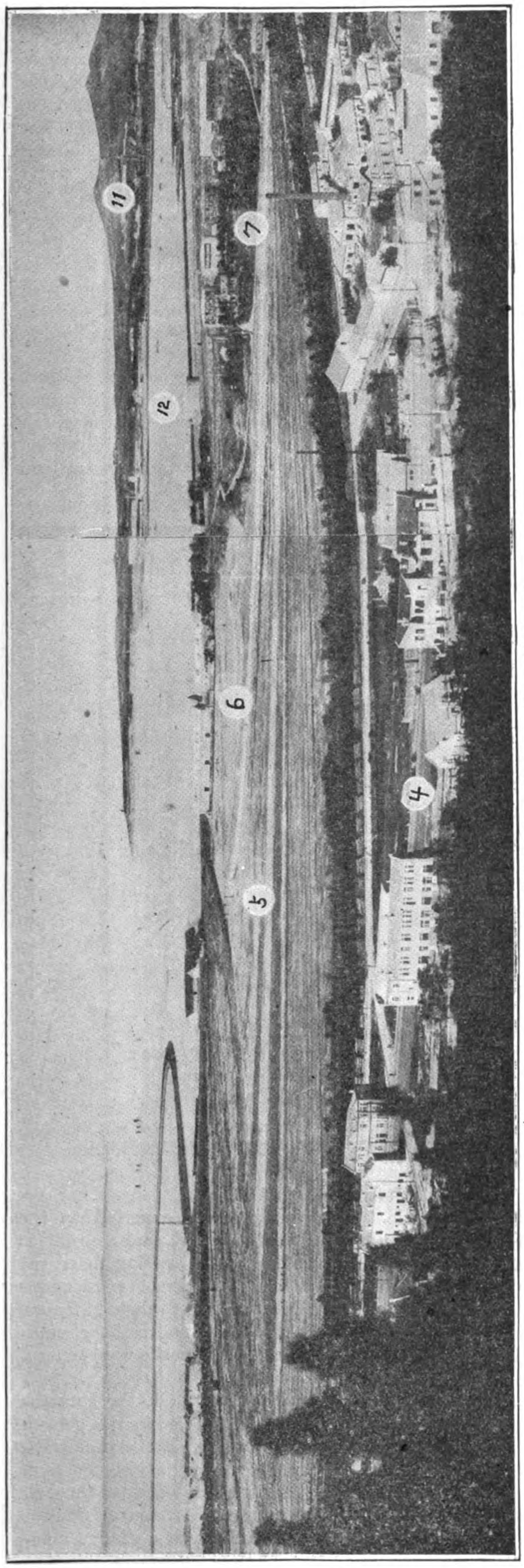


DR. M. AKIYAMA

Chief Civil Administrator of the Kiaochau Leased Territory since the Office was Created in October, 1917. He was Formerly in Korea in a Similar Capacity under Marshal Terauchi. An Accomplished Jurist and International Lawyer, he Stands for the Co-operation of all Nations in the Development of the Trade and Industry of the Leased Territory. It is due to his Intelligent Direction that Tsingtau has Forged Ahead like a Boom City of the American West, into one of the Most Promising Industrial Centres of China. He welcomes complaints Amicably to Adjust all Difficulties that may Arise.

The Oil Tanks Incident

As will be seen elsewhere in this number, the Japanese authorities planned a large factory district as an extension of the original port and are reclaiming another extensive area for further development. The rapidity with which these areas were developed and brought within the city limits may be likened to the traditional booms in laying out and building some of the Western American towns. Within the limits of this new district are located the tank installations of the Standard Oil Company of New York and those of the Asiatic Petroleum Company, an equally important British concern. The Japanese municipal authorities in charge of the work of extension looked ahead and saw that at the rate of building progress these tanks would soon be brought within the factory limits and become a menace to surrounding property. Therefore, they recommended to the civil administrator that an order be issued for their removal. This order was written and delivered on June 20, 1919, and when its contents were reported in New York it was asserted that the Japanese had confiscated the American oil properties at Tsingtau. Now, there is little doubt that the Japanese were well within their rights in looking far enough ahead to provide for the safety of the new industrial district, but they overlooked that such a sudden order without explanation or previous warning would create misunderstandings. At that time, it was accepted as a fact that Japan would adhere to her note of May 25,1915, covering her



THE FACTORY DISTRICT OF TSINGTAU

The above illustration shows the exact location of the tank installations of the Standard Oil Company of New York and the Asiatic Petroleum Company, Ltd., of London. The unoccupied area in the foreground has been reclaimed, filled in, and laid out to streets for the further extension of the factory district part of which is seen in the near foreground. The proximity of the tanks to the wharf shown on the extreme left makes this location a most desirable one. With the spread of the city, the time must come when the installations will have to be removed. Until such time, they will remain where they are.

conditions for the future restoration of the port to China, and which provided for an exclusive Japanese concession. It was believed that she was carving out the most valuable section of Tsingtau, adjacent to the docks and railway terminus, for her own exclusive use. Without following all the details of the settlement of this question, it may be said that it was amicably adjusted last year when the British Ambassador at Tokyo, Sir Charles Elliott, visited the port, and talked the matter over with Dr. Akiyama. The American and British oil tank installations are still in their original locations and will not have to move until such time as buildings in the new factory district reach a point where the proximity of the oil tanks would become a public menace. Before that time arrives, it is confidently hoped by the Japanese that the question of the status of the port will have been amicably and honorably settled. If these plants are compelled to remove, it will be some Power, other than Japan, that will enforce the building regulations; and, by that time, the enhanced value of the ground will enable the oil companies to sell at a profit that will more than cover the cost of removing their plants. The oil tanks incident is closed, settled by an amicable conversation between two trained, capable officials.

A Wide Open Door

As far as I could see, the door to Shantung stands wide open. Tsingtau may be likened unto an open door partially obstructed by brambles and thistles, which hinder and sometimes prick the pedestrian on his way through. They are annoying, but anyone can easily cut his way through to commercial success. The Japanese are doing their best to uproot the thorny plants, and in time they will be successful.

Twelve years ago when travelling in Manchuria I made the acquaintance of a young, energetic Englishmen, who represented one of the most important British firms in China. He was ubiquitous. Whether in Changchun, Mukden, Newchwang, Dairen, or on the train, one ran into him. He was always on the job, clearing the way to a successful trade for his firm. He carried the proverbial chip on his shoulder, lodging complaints at once with the highest Japanese authorities whenever difficulties arose which seemed to interfere with his rights to equal opportunity. The Japanese directors of the South Manchuria Railway told me at the time that they appreciated his frankness and the spirit with which he had carried his grouches to them direct instead of sulking and accusing them of unfairness.

I found this old friend in Tsingtau, still representing the same old-established British hong, still fighting and persevering in the face of difficulties and intense competition, still going over the heads of subordinate officials with his complaints. His troubles are over. He has won for his firm their share of the business of the port by clearing away the brambles and thorns on the road to success. He does not fear Japanese competition; in fact, he says he rather welcomes it, as he knows that, with a fair field, he can overcome lower Japanese costs by British efficiency. He understands the Japanese and their ways. Here, it seemed to me, was the answer to the problem that is worrying many American businessmen in China.

We have often been told by one of the foremost American shipping magnates of the Pacific Coast, that "where the Jap goes in, the white man goes out." Remembering the many times I have heard his utterances repeated, I could not help but compare the methods of his firm with those of the older established British hong. What one could do, the other could also do. It seemed to me that the representative of the British hong had dug out the secret to success in China—that is to say, secret to new-comers, but well known to old timers. Keeping everlastingly at it is the key. China is no place for the quitter or get-rich-quick trader. The American or Briton who enters the field in the Far East in competition with the Japanese, must make up his mind to stick and fight it out. It has taken years for the British firm to establish itself firmly and successfully to combat the competition of Japan in her own bailiwick. But British dogged determination has done it. The British hong did not go out when the "Jap" came in. Not on your life! It

stuck. Bull-dog pertinacity and a determination to face and overcome obstacles pave the only road to success in China, as elsewhere; but more so in any territory where the European or American has to meet the full force of concentrated competition. The chief civil administrator at Tsingtau confided to me that although the British merchant sent his complaints to London before giving him an opportunity of investigating, if all foreigners in Tsingtau were like him, there would be an end to serious misunderstandings.

I gathered from Dr. Akiyama's talk that if the foreign merchant would quit grouching and come out into the open with his complaints, so that the Japanese authorities would know what they had to contend against, there would be no misconceptions of Japan's policy. He added, that he always welcomed the visit of the British merchant or any other foreigner, coming to him with a complaint. He meant it. The representative of Taikoo has won out, and his firm is placing another steamer on its weekly Tsingtau run. There is a moral to this story.

Americans at Tsingtau

Now, let us take a look at the American business community of the port of Tsingtau. During the height of the agitation over Japan's alleged discrimination against American interests in Shantung there were only two American firms in the port, the Standard Oil Company of New York, and William Katz, a naturalized American citizen of Russian origin engaged in the cattle and meat business and operating a refrigerating plant. This gentleman is also a large stockholder in the China Mongolia Export Company (also an American enterprise) operating a cold storage plant at Tientsin. The firm of William Katz in Tsingtau holds the contract for the supply of fresh beef to the American army in the Philippines. The company is organized under the laws of Delaware, with 49 per cent. of the shares now held by the Japanese firm of Okura & Company. It is a matter of public knowledge that the Japanese firm paid Yen 600,000 for its half-interest in a company capitalized at Yen 300,000. It is necessary to bring out these facts, as the story is confidentially circulated throughout China that the Japanese brought pressure upon Mr. Katz to take them in as partners. All that can be said in regard to this is that the American firm negotiated a good-sized loan with the Japanese, and afterwards let them in on the ground-floor for 49 per cent. of the stock, at 400. Not a bad business deal for the American. Mr. Katz, it may be assumed, is a keen business man. He is now carrying out a fairly profitable American government contract in the Philippines, but there is no guarantee that this business will last forever. On the other hand, Japan is beginning to draw heavily upon China for beef. It has become part of the Japanese army ration, and I understand that a contract for half-a-million pounds will be let, this year. This is only the beginning of a new business, the development of which can be better appreciated when it is understood that there is little or no beef in Japan, itself. By the time the American army contract is completed, or awarded to some other firm, the house of Katz will have a brilliant future supplying the needs of Japan, through its influential Japanese partners.

Outside of the two American concerns I have mentioned, there were no others in the field up to last year. From time to time, representatives of American firms visited the port, securing a fair amount of business from the Shantung railway administration but making no attempt to participate in the greater general and import and export trade. Shantung products exported to the United States went largely by way of Japan and paid a profit to the Japanese merchant. Many American firms desiring to escape from this condition, attempted to establish direct connections with the native dealers, but, as the latter are not equipped for such business, nothing came of it. It was natural, under the circumstances, that the business of the port, as far as America was concerned, should go on through Japanese agencies.

In the hope of assisting direct American trade, the International Banking Corporation opened a branch office in the port in 1919; and, later, the China Pacific Company of Portland entered the field and for some time have been sending a steamer each month to the port for cargo. An American firm operates through a British concern managed by a Japanese. Mr. Terrel Adams, another American, is interested in automobiles and a general commission business. As yet, there is no American firm in Tsingtau

The Celebrated Oil Tanks Removal Order:

The following is the text of the order issued in June, 1919, for the removal of the Standard Oil and Asiatic Petroleum Companies tanks:

"Realizing that the kerosine oil tank at Tsaochutan, belonging to the above-named Company, is a source of danger to the public welfare, the same is ordered to be removed to any place except the Western side of the line between the mouth of the Kai-Haku River and the centre of the Asahi Bay, passing the Eastern corner of Taitungchen and the top of Mount Asahi.

"The said removal to be effected by the 31st of March, 1921.

"(Signed) MENICHI OSHIMA,
"*Commander-in-Chief,*
"*Tsingtau Force.*"

"Dated June 20, 1919.

making a specialty of purchasing general cargo for export or the general combined export and import business.

These are the facts as I found them. Aside from the Standard Oil tank trouble already mentioned, there was only one other incident that occasioned correspondence between the United States state department and the Japanese foreign office.

The Missionary School Case

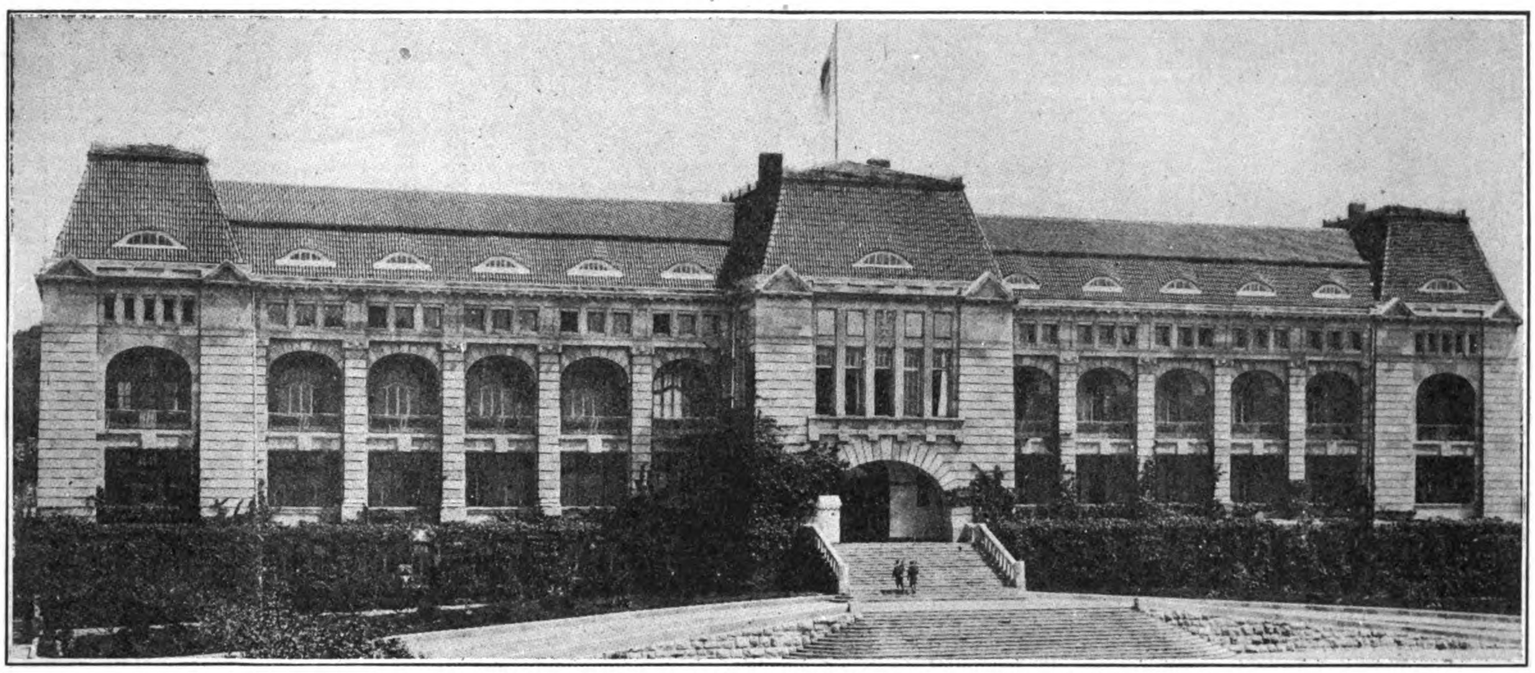
While the anti-Japanese agitation was at its peak in 1919, the Japanese authorities at Tsingtau ordered closed the Hugh O'Neill, Jr., Boys' High School, conducted by the American Presbyterian Mission. The Japanese police claimed to have evidence that convicted the Chinese principal of the school, a Mr. Wang, of circulating anti-Japanese propaganda. The American heads of the school stoutly protested and defended his innocence, but the Japanese authorities reposed confidence in the reports of their secret police, which they could not make public without revealing the working of its organization. On the Japanese side it was clearly a case where the higher authorities had no option other than to be guided by the reports and evidence submitted by their own subordinates. Coming as it did at a time of great friction, the incident gave rise to stories that American missionary schools were to be excluded from the Leased Territory and that a campaign against Americans in general had been inaugurated. These reports, circulated broadcast throughout China by the press of Shanghai at the beginning of the summer season, had a most alarming affect, causing many foreigners to hesitate before sending their families to Tsingtau for vacation. The matter has since been amicably adjusted; the order for opening the school was given on March 9, 1920. One or two other very minor incidents have occurred, which would have passed unnoticed in any other part of the world. So much for discrimination against American interests.

British Complaints and Redress

The British have had their own troubles with the Japanese, and, as usual, these have to do with matters directly connected with shipping, wharf privileges, unloading and quarantines. I have not made a careful investigation into these incidents, as the British merchants and authorities have their own sensible and happy faculty of solving such difficulties with their ally. The rule of the port authorities, is "first come, first served." They try to live up to it, but it is not always possible to satisfy everybody. The wharves have had to handle an ever-increasing volume of freight, and difficulties were inevitable. To obviate any possibility of further complaints about delays in docking and unloading, and to provide for the expansion of trade, the Japanese will start work on the third pier this year and enlarge No. 1 Pier by building a berth for its full length on the south or uncompleted side. This enlargement of the port will effectively do away with any further complaints arising from so-called discrimination against foreign shipping.

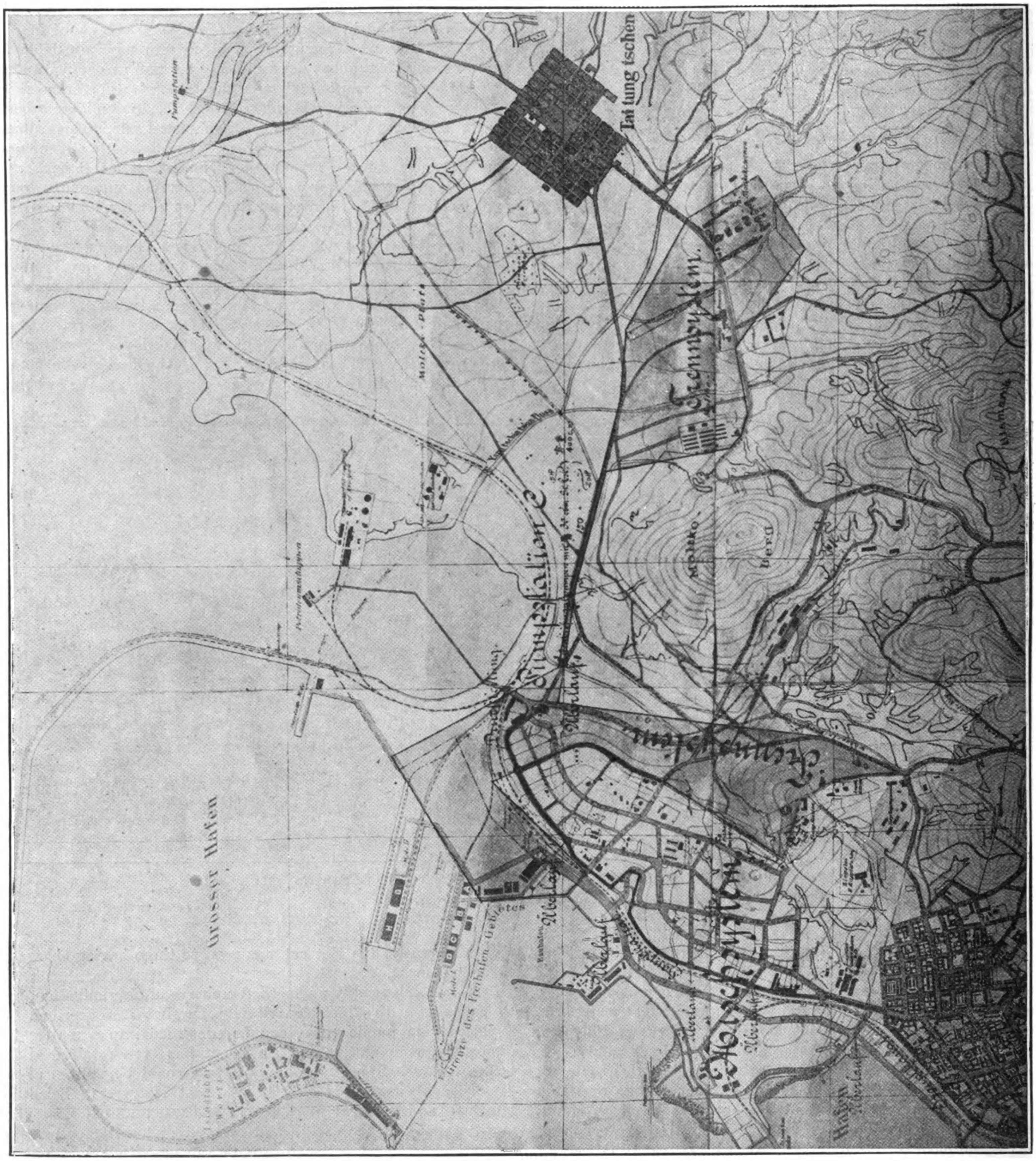
But British shipping concerns in Tsingtau apparently found sufficient causes for resentment, and I am reliably informed that during last year fifteen complaints were laid before the British consular officials, and sent to Downing Street, charging the Japanese port authorities with "discrimination and inefficiency." When a sufficient number of these annoying incidents had accumulated, the foreign secretary called the Japanese ambassador, and laid the facts before him. The ambassador forwarded them to Tokyo, whence they were promptly sent to Dr. Akiyama, asking for an investigation and explanation. It was the first notice to the Tsingtau authorities that all was not well at the wharves and, apparently, the riot act was read to those having charge of this department.

Now, I can readily understand a charge of discrimination, but to cap this with "inefficiency" is somewhat disconcerting. If inefficiency in public office, can be construed into a matter for diplomatic complaint, a fine precedent has been established for future trouble. What a wonderful story could be written about "Inefficients in High Places" these past six years. Scholarly bunglers and political muddlers have caused untold misery in many nations of the earth, and escaped diplomatic or political censure. In the face of such examples of ineptitude as might be cited the charge of inefficiency against Japan, because of some subordinate harbor official, is almost grotesque. However, it is a matter of record and it is far more to the point to charge the Japanese habor officials with inefficiency than to assume that this lack of experience in dealing with foreigners which gives rise to misunderstandings is due to a set policy on the part of the Japanese government wilfully to discriminate against the trade of other nations. There are undoubtedly many inefficient officials in the Japanese public service. On the other hand, the Japanese can plead extenuating circumstances. The port is still under military



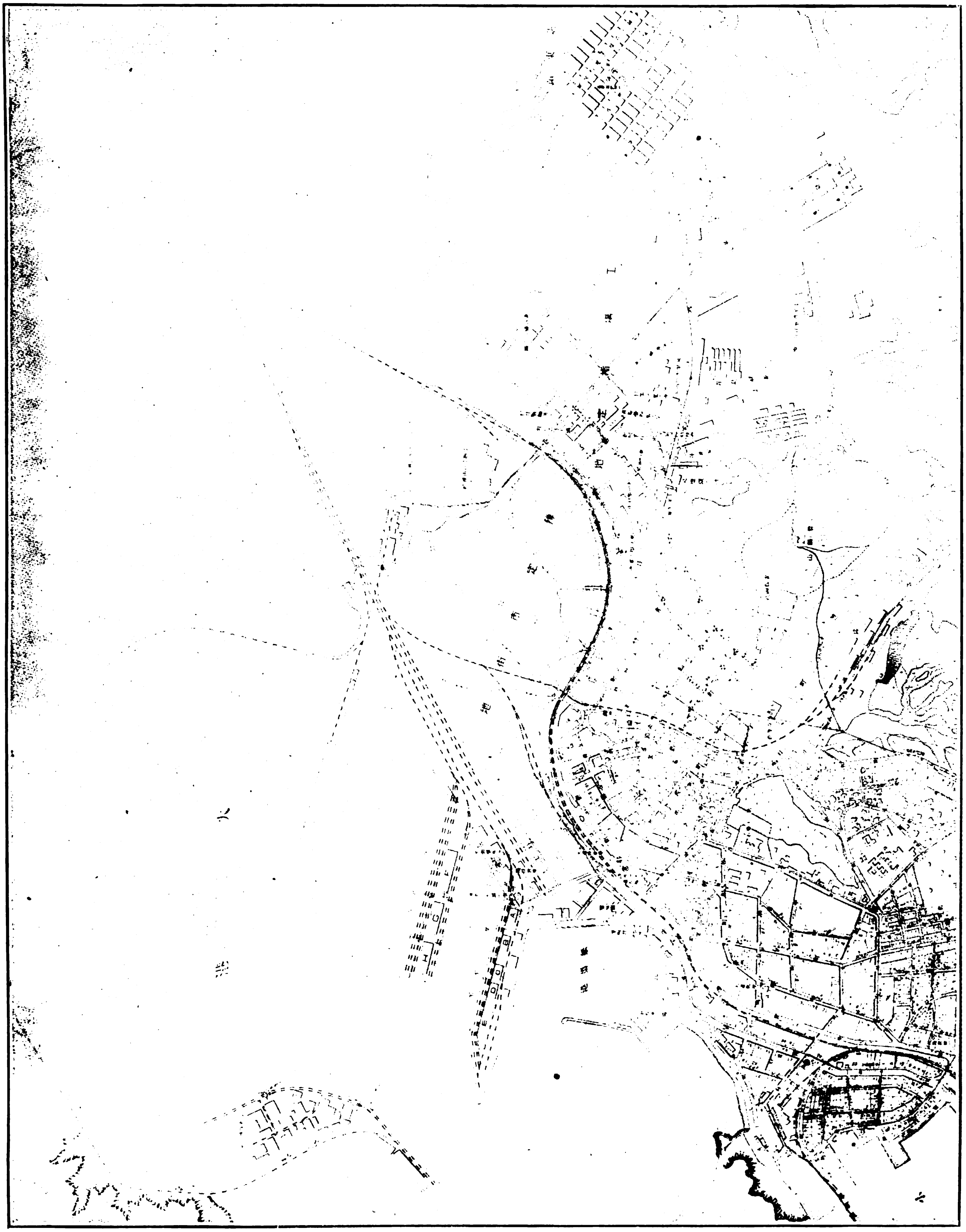
GOVERNMENT HOUSE AT TSINGTAU BUILT BY THE GERMANS

Headquarters of the Japanese Military and Civil Administration.



MAP OF THE NORTH-EAST PART OF TSINGTAU IN 1914

By comparing this map of the city as it was when the Japanese took possession in 1914 with the one on the other page which shows the same district in 1921, great improvements and extensions made by the Japanese will be appreciated. The German had made no serious attempt to develop the industrial possibilities of the port, confining their building activities to the residential section far removed from the wharves and railway centre. The Japanese, however, were quick to see the advantages offered under the treaties for industrial development and the desirability of the land in proximity to the ocean and land transportation centres for factory purposes. Any real expansion of the city had to take place in this direction. This gave rise to the belief that the Japanese were planning to create a separate Japanese settlement in the commercial heart of an international one, and this, more than any other thing, has created jealousies, and rivalries, and kept other foreign firms from taking advantage of opportunities open to all. Study of these plans will show how the Japanese have reclaimed the waste marsh land adjacent to the tank installations and straightened out the railway terminals to the docks across the reclaimed area, and laid it out for streets. The development of the city in other directions is also clearly shown by the new streets, most of which are built up with residences and factories.

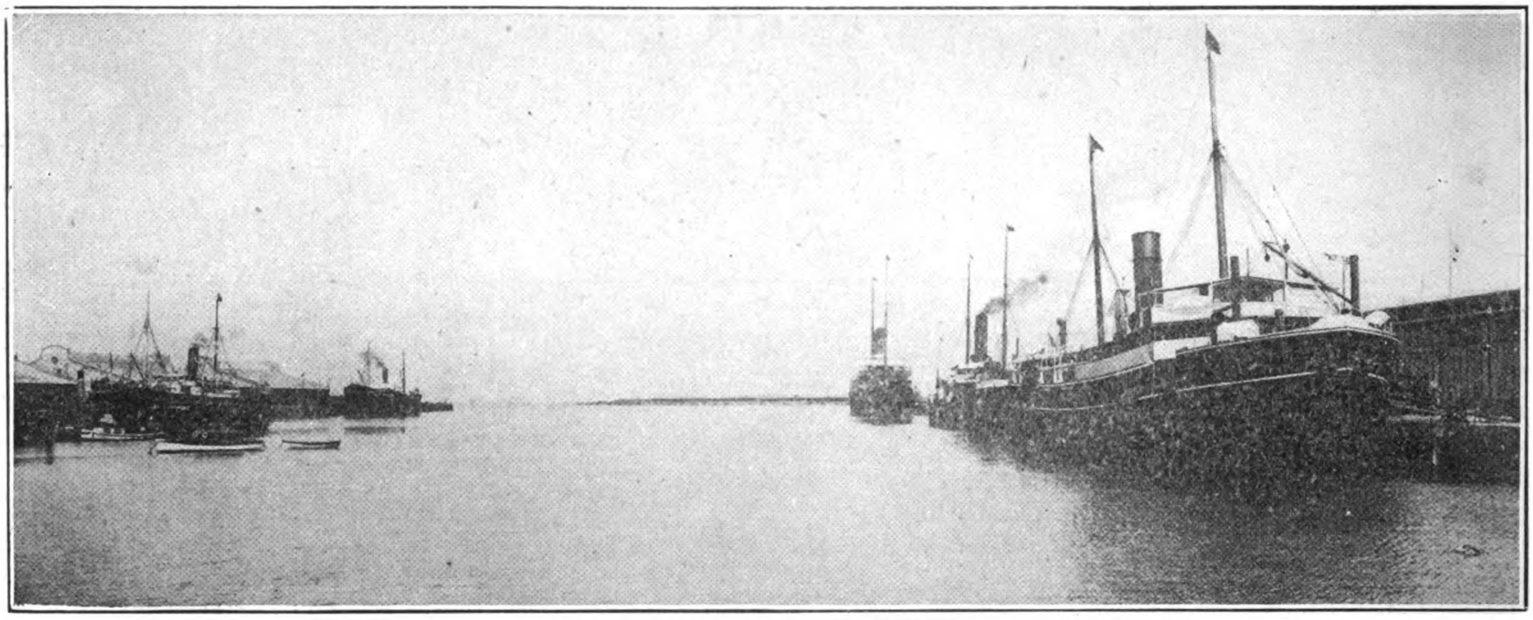


MAP OF THE NORTH-EAST PART OF TSINGTAU IN 1921.

Showing the extension of the city in that direction under Japanese administration. Further particulars of these improvements will be found in the article on Tsingtau appearing in this number of THE FAR EASTERN REVIEW.

rule, pending such time as China may need to enter upon negotiations for deciding its future status.

Militarist are much the same the world over, when in supreme control. We can imagine a case where a Japanese ship entering the port of Tsingtau with cargo consigned to the military authorities may be given the right of way over all others waiting their turn to dock. We have seen similar happenings in other parts of the world occupied by other armies. There may have been only one case of army stores in the cargo of the steamer, which justified preferential treatment from the military. viewpoint. I do not say that this actually was the case in Tsingtau, as I am ignorant of the details of the charges of discrimination. But it might well have been so, as long as the military rule was supreme. Whatever these charges consisted of, it is safe to say the mere fact that they were made without being first brought to the attention of the higher officials of the port has materially helped to clarify the



THE WHARVES AT TSINGTAU

The above shows two of the wharves at Tsingtau, whose management by the Japanese Port Authorities has been characterized by British steamship interests as "inefficient." The wharf on the left is not completed on the other side, having berths for only three steamers. The wharf on the right has docking space on both sides and can accommodate six to eight steamers at a time, according to their size. The pier end berth of this wharf on the sheltered side is considered by captains as the most desirable, being sheltered from the north-west gales in winter by the warehouse on the dock. Much of the difficulty in handling the commerce of the port has arisen from the desire to have this berth in preference to others. A Japanese engineer is now in Tsingtau to complete the berthing capacity of the No. 1 Wharf by dredging out the other side. The smaller pier or No. 3, hitherto used exclusively for oil, is to be enlarged this year, to the size of the other wharves, thus providing accommodation for nine to twelve more steamers at a time, and doing away with any possible future cause for misunderstanding in the management of the wharves.

atmosphere. Complaints are now welcomed by the chief civil administrator, whose policy is to discriminate as far as possible in favor of the foreign shipper. The extension of the harbor facilities will put an end to all such complaints in the future.

A Free Field for All

Dr. Akiyama, the chief civil administrator, requested me to give special expression to his standing invitation to foreign firms to come and help in the development of Tsingtau and the Leased Territory. The field is free. The Door is open for the acquisition of residential and factory properties. There is no discrimination. All that is required is initiative; and, again quoting, Dr. Akiyama, there will be no misunderstandings if complaints, as they arise, are brought fairly and squarely before him.

It is true that competition is keen. It is keen in any part of China. The newcomer, the "griffin," has much to learn. He has a hard road to compete successfully with old established hongs who have their roots firmly in the ground. This condition, however, is beyond governmental regulation. It is merely a matter of efficiency, of organization, and sticking to it, without allowing petty and minor incidents to discourage one.

There is no need for Americans to lose their opportunity to share in the prosperity of Tsingtau. The evidence very clearly indicates "that they cried before they were hurt," misled by erroneous reports scattered broadcast in order to create discord and strife and discredit the Japanese. Dr. Akiyama says that his government welcomes the co-operation of American firms and capital in developing Tsingtau and the Leased Territory as long as Japan is in temporary control. Despite the fact that American trading firms have been conspicuous by their absence, and that our press has poured out the vials of its wrath on "Japanese discrimination against the trade of America in Shantung," the Japanese authorities have been most liberal in their purchases from America. The American trader in China perhaps has not participated in this business, but the American manufacturer has reaped a good profit and seen his standards and specifications installed and the old German railway, on which not an American nail was used, gradually being converted into an up-to-date American line. As will be seen later on from the railway statistics, the Japanese Shantung railway administration has bought, and (what is more important) paid in cash for railway materials in Shantung since 1916 the sum of $10,397,226 gold, or almost equal to the original cost of the line; and, of this amount, one-third, or $3,046,468 gold, went to American manufacturers. This included $661,293 for machine tools for the Syfang Shops. It is true perhaps that the Japanese have bought in the cheapest market, but it is also true that they did the same in Manchuria and did for American manufacturers of railway materials in China something which up to date we have been unable to do ourselves. There is no obligation on the part of the Japanese government or engineers to adopt American standards and specifications. That they have done so in Manchuria and Shantung would seem to imply that they prefer them to European standards for the particular class of work for which they are used. It seems somewhat foolish and unbusinesslike that American manufacturers should permit this advantage to be taken from them.

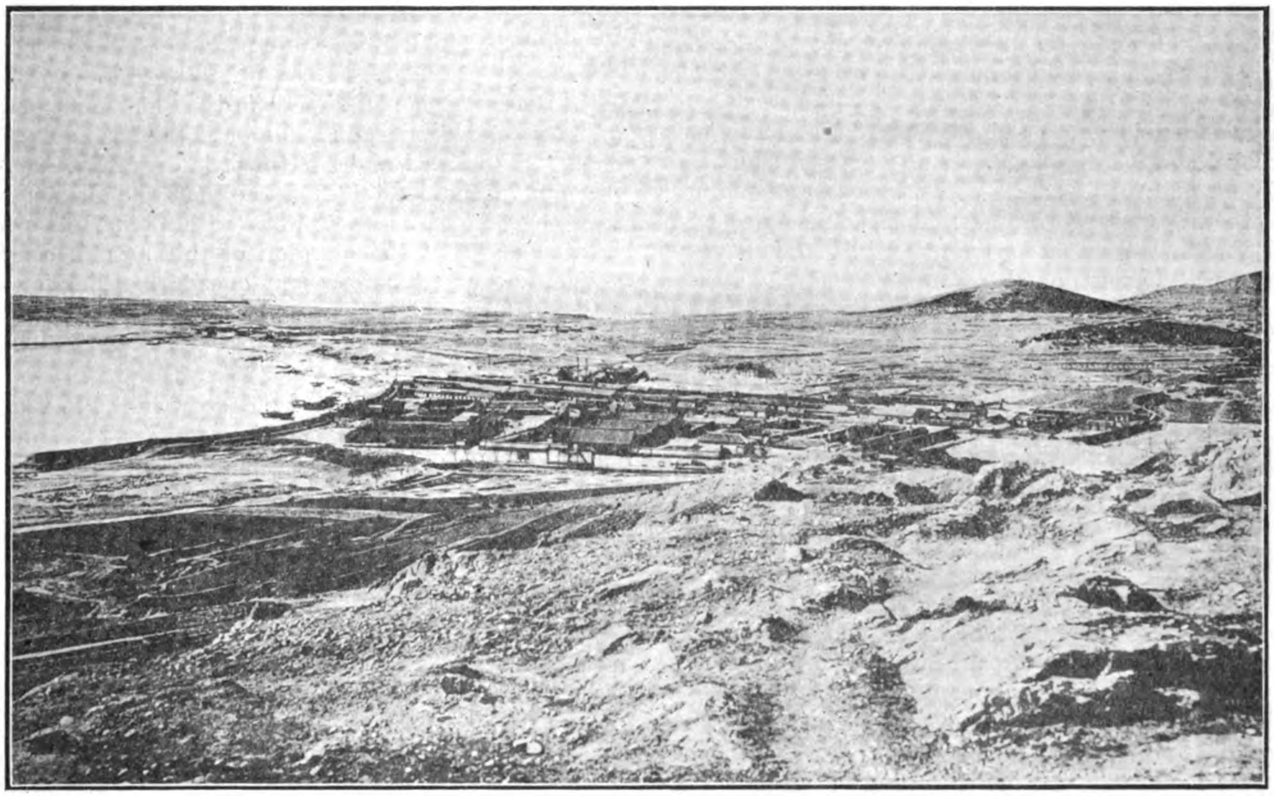
The Official Status of the Shantung Question

Statement Issued by the Japanese Ministry of Foreign Affairs, Tokyo, June 15, 1920

WHEN the Treaty of Peace with Germany became effective in January, 1920, and the German rights and interests in Shantung passed into the possession of Japan by virtue of the provisions of that treaty, the Japanese government, with the intention, in pursuance of their repeated declarations and pledges, of effecting the restoration of Kiaochau to China, and to make the necessary incidental arrangements, instructed the Japanese minister in Peking to inform the Chinese government:

(1) that the Japanese government desired to open negotiations with the Chinese government with regard to the restoration of Kiaochau to China and the settlement of the various details arising in connection with the matter, in order to arrive in this manner at a speedy solution of the entire question, and that they were constrained to keep those troops stationed there for the time being in order to insure the security of communications and to safeguard the interests of Japan, and of China who is equally interested in the railway as a co-partner in the joint enterprise;—that they accordingly hoped that the Chinese government, appreciating the intentions of the Japanese government in this matter, would, with despatch, organize a police force to take the place of the Japanese troops in guarding the railway, in order that these Japanese troops might be withdrawn even before an agreement was reached on the main question of Shantung.

The foregoing was officially published on January 24 of this year, and the Japanese government made preparations to begin negotiations at any time, but three months passed without their receiving any reply from the Chinese government.



The old mud-walled Chinese fishing village of Tsingtau, which the Germans and Japanese developed into the present magnificent modern metropolis port and summer resort

hoped the Chinese government would make the necessary preparations for that purpose;

(2) that as regards the Japanese troops stationed along the Shantung Railway, not only was it the intention of the Japanese government to withdraw them, as a matter of course, upon an agreement being arrived at between the two governments as to the restoration of Kiaochau, but they were also prepared to effect the withdrawal as speedily as possible even before any such agreement was entered into;—that, in the absence of any force, however, to assume the duty of protecting the railway after evacuation, they

It is a source of the deepest regret to the Japanese government that, at a time when all the nations of the world are putting forward their best efforts for the establishment of an enduring peace, questions such as this should remain unsettled between Japan and China. The Japanese government have been informed that the Japanese charge d'affaires in Berlin has received from the German government the various documents specified in Art. 158 of the Peace Treaty. Consequently the Japanese government, being all the more desirous of arriving at a speedy settlement of the matter for the mutual benefit of the two nations, again on April 26

instructed the Japanese minister in Peking to request the Chinese government to take forthwith the necessary steps, of which the adoption was urged in their previous communication.

It was not until May 22 that the Chinese government sent a reply in the following sense :—

"The Chinese government have noted that it is the intention of the Japanese government, now that the Treaty of Peace has come into force, to restore Kiaochau to China and to prepare for the withdrawal of the troops from along the Kiaochau-Tsinanfu Railway. China, however, has not signed the Treaty of Peace with Germany, and is not therefore in a position to negotiate directly with Japan on the question of Tsingtau on the basis of that Treaty. Furthermore, as the Japanese minister at Peking is very well aware, the whole people of China have assumed a strongly antagonistic attitude in regard to the question in hand. For these two reasons, and because of the importance they attach to amity between Japan and China, the Chinese government naturally felt it inconvenient to make a reply at the time. On the other hand, the Japanese military establishments within and without the leased territory of Kiaochau have been rendered unnecessary, and as it is the hearty desire of the people and government of China to have the conditions along the Shantung Railway restored to the pre-war footing, the Chinese government proposes to form at an early date a proper organization to take the place of the Japanese troops in guarding the whole line. However, this proposition has nothing to do with the settlement of the question of Kiaochau and the Chinese government trust that the Japanese government will not delay the withdrawal of the troops on account of that question."

Upon receipt of this reply, the Japanese government addressed the following note to the Chinese government, urging reconsideration of the position taken by them :—

"In their memorandum, the Chinese government state that, attaching as they do great importance to amity between Japan and China, they do not find themselves in a position promptly to meet the request of the Japanese government for opening direct negotiations on the Shantung question for the reason that they have not signed the treaty with Germany and because of the strong attitude of antagonism on the part of the whole Chinese people on this question.

"In view of the existence of a formal agreement between the two governments as to the fundamental principle governing the settlement of the question under discussion, and in view, further, of the fact that the repeated declarations of the Japanese government leave no room for doubt as to the singleness of purpose with which Japan seeks a fair and just settlement of the question at the earliest possible date, the Japanese government fail to see the force of the argument advanced in the Chinese memorandum.

"It is a positive fact that all the rights and interests which Germany formerly possessed in Shantung by virtue of a treaty with China have been transferred to Japan in accordance with the Treaty of Peace. The Chinese government having, in the above-mentioned formal agreement with Japan, pledged themselves beforehand to acknowledge and consent to this transfer, these rights and interests have of right come into the possession of Japan, irrespective of whether or not the Chinese government have signed the Peace Treaty with Germany.

"Immediately upon the coming into force of the Treaty of Peace, therefore, the Japanese government, in accordance with their repeated declarations and with agreements entered into, proposed to the Chinese government to open negotiations with a view to restore to China such of the rights and interests in Shantung as were to be restored, and to confirm in this connection such matters as required confirmation. The Japanese government were confident at the time that the Chinese government would respond readily to the proposal, and that they would not hesitate to open the path for the Japanese government to demonstrate in a concrete way their attitude of fairness and justice towards China. Contrary to these expectations, however, the Chinese government, after a delay of several months, have returned a reply that they do not find it advisable to open negotiations, giving as their reason the abstention of China from signing the Treaty of Peace and the antagonism of the Chinese people.

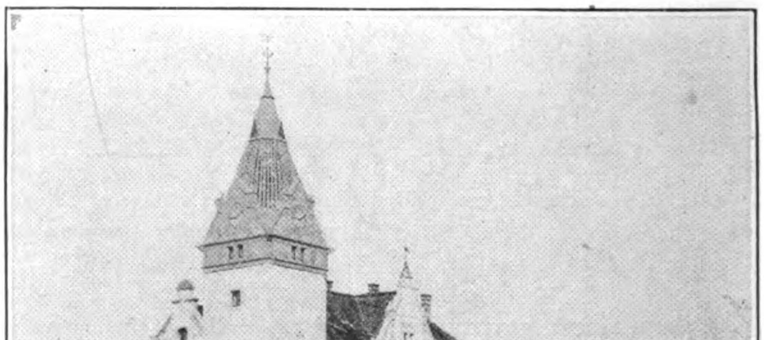
"This attitude on the part of the Chinese government prevents the Japanese government from realizing their sincere desire to carry out, with the utmost good faith, their treaty obligations, and to fulfill their expressed pledges. It need hardly be pointed out with whom rests the responsibility for delaying the settlement of the questions arising with regard to Shantung. The Japanese government, however, holding in high regard, as they have always done, amity and good neighborhood with China, hereby repeat the declaration that they are ready to negotiate on this question at any time the Chinese government may deem convenient. The Japanese government do not believe it to be the desire of the Chinese government to be held responsible for the delay in the eyes of the world, and it is in this belief that they sincerely urge the Chinese government to reconsider the matter.

"As to the railway guard in Shantung, it is the intention of the Japanese government, as stated in their note of January 19, 1920, to withdraw the Japanese troops, even before the conclusion of negotiations regarding Shantung, as soon as a Chinese police force is organized to guard the railway.

"The Japanese government, feeling confident that the Shantung railway police guard will be organized in accordance with the promise of the Chinese government and the understanding reached between Japan and the Powers at the Paris Conference, are prepared to withdraw the troops as soon as such police organization shall have been completed by the Chinese government and the Chinese and Japanese officials concerned shall have settled the procedure of transferring the duty of guarding the railway.

"Reference has been made in the Chinese memorandum to the military establishment in and around the Leased Territory of Kiaochau. It is with the desire to settle definitely, *inter alia*, the disposition of these establishments that the Japanese government seek to commence negotiations with China. It need hardly be pointed out that the question of this nature, constituting as it does only one item out of many questions calling for discussion and settlement, would naturally find its solution when the Chinese government proceed to negotiate, and a settlement of the Shantung question as a whole is reached."

While it is a source of the deepest regret to the Japanese government that the existing understandings concerning the subject under review cannot at once be carried out, they remain none the less unchanged in their sincere desire to effect a fair and amicable settlement of this question with the least possible delay, and are prepared to make further efforts towards the realization of that fixed policy.



Tsingtau Station of the Shantung Railway

The Status and Future of the Shantung Railway

WHEN the Japanese military authorities took over the properties of the Shantung Railway in 1914, the act seemed to be in violation of the established principle of international law covering the inviolability of private property. In an article entitled "The Status of the Shantung Railway" printed in the November, 1914, number of THE FAR EASTERN REVIEW, it was contended that the shareholders or owners were entitled to a reasonable price for its confiscation and an indemnity for the use of the line during the time they were forcibly withheld from legitimate enjoyment of the property. The value was worked out at about £5,000,000, which was held at that time to be an adequate compensation of the private owners of the railway and mines. This opinion was based upon the fact that, although the concession for the railway had been extracted from China by the imperial German government, the charter for its construction and operation had been granted to a private company, in which the German government held no pecuniary interest, other than a reasonable tax which took the form of a participation in the excess profits over five per cent., in a fair revenue to the state for a public utility franchise.

The writer believed, at that time, that the action of Japan foreshadowed a new interpretation of international law, that the whole fabric of the inviolability of private property under established law controlling warfare, would tumble to pieces, and that it would be extremely difficult to interest capitalists in future foreign ventures. This vision of the future has proved true.

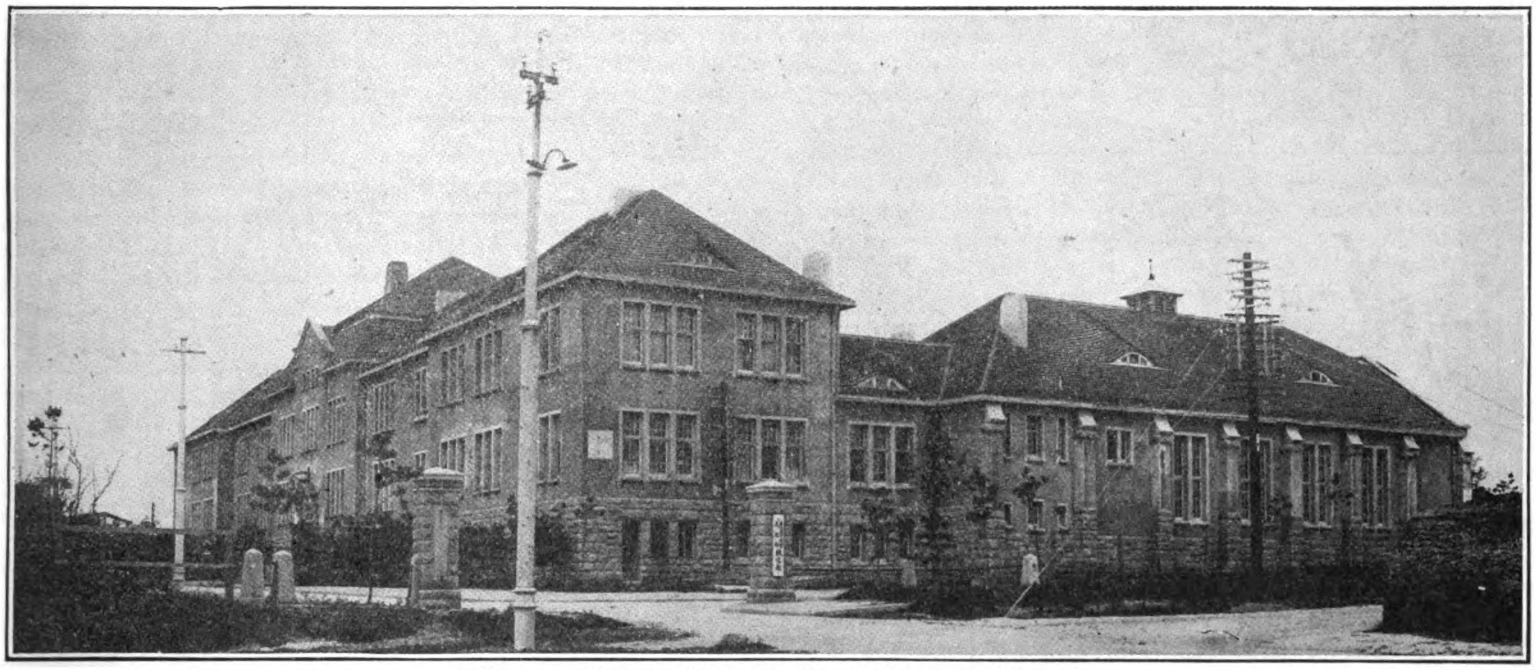
The German Shantung Railway Company, as a private enterprise, duly filed its claim for indemnity and other damages for the confiscation of its properties, but, during the war, such a claim received no notice from the Japanese government. At the Peace Conference my prophecy was fulfilled. A wholesale expropriation of German private property took place without the Allies affording any compensation to the individuals. Article 297 (6) of the Treaty reads :—

"The allied and associated powers reserve the right to retain and liquidate all property, rights, and interests belonging at the date of the coming into force of the present Treaty to German nationals, or companies controlled by them, within their territories, colonies, possessions and protectorates, including territories ceded to them by the present treaty."

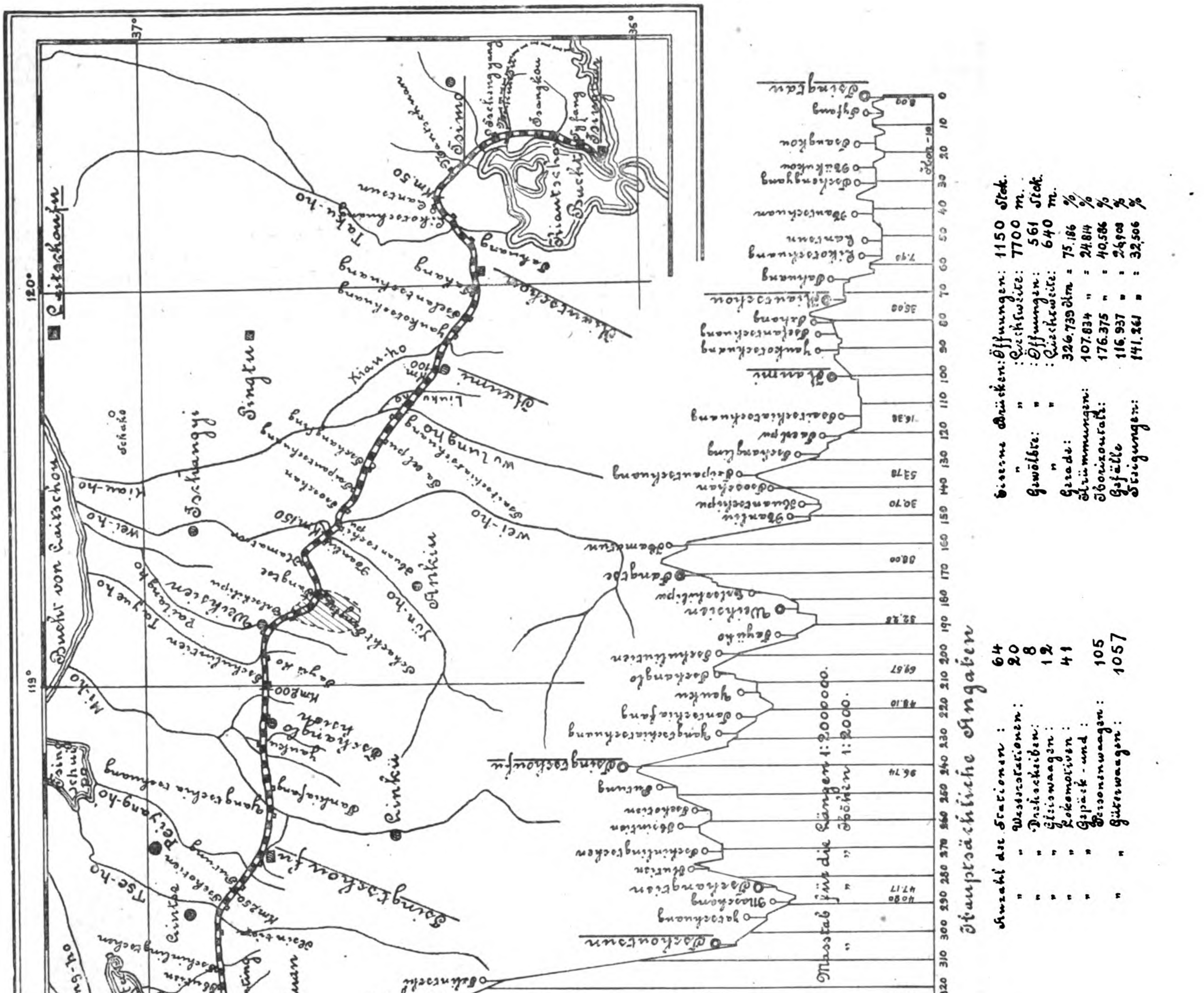
Mr. J. M. Keynes in his book on "The Economic Consequences of the Peace," says that "the treatment of such property forms, indeed, a very significant and material section of the Treaty, which has not received as much attention as it merits, although it was the subject of exceptionally violent objection on the part of the German delegates at Versailles. So far as I know, there is no precedent in any peace treaty of recent history for the treatment of private property set forth below (in the treaty) and the German representatives urged that the precedent now established strikes a dangerous and immoral blow at the security of private property everywhere." Mr. Keynes expresses his opinion that "this is an exaggeration and the sharp distinction, approved by custom and convention during the past two centuries, between the property and rights of a state and the property and rights of its nationals is an artificial one, which is rapidly being put out of date by many other influences than the Peace Treaty and is inappropriate to modern socialistic conceptions of the relations between the state and its citizens. It is true, however, that the Treaty strikes a destructive blow at a conception which lies at the root of much of so-called international law, as this has been expounded hitherto."

The old conception has given place to the new. The rights of the private German owners of the Shantung railway have passed to the Japanese under the provisions of the Peace Treaty, in the same manner that the rights of individual Germans in other parts of the world have been taken over by others of the allied and associated powers. It is something that war-makers in all countries should ponder over very seriously. The defeated must pay. Woe to the vanquished ! The lesson of the Peace Conference has been brought home to international finances.

Co-operation has taken the place of pre-war competition for loans

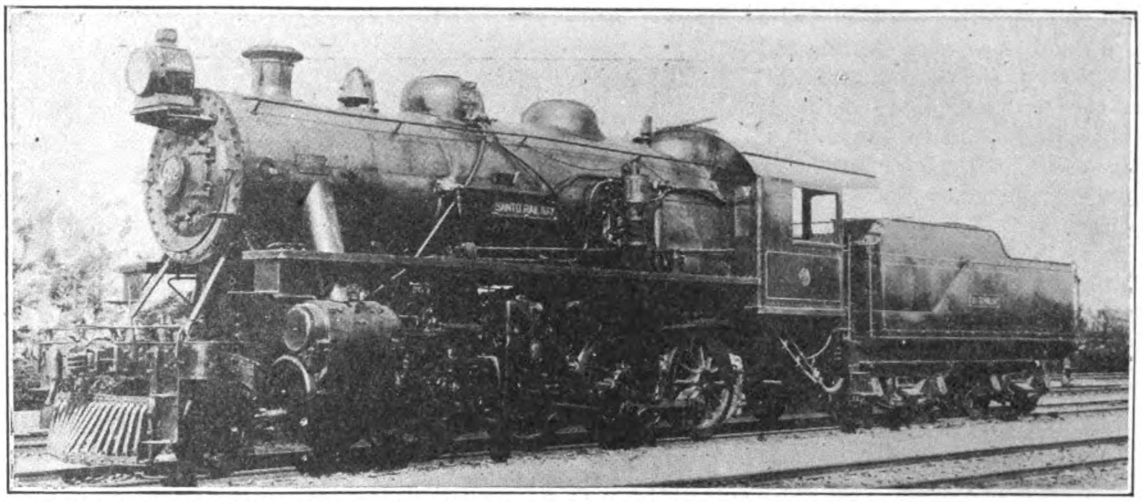


Shantung Railway Administration Building at Tsingtau


Hauptsächliche Angaben
Masstab 1:1250000
Anzahl der Stationen: 64
Länge der Hauptlinie Tsingtau - Tsinanfu - West: 395,373 km
Tsingtau
Kiautschou
Weihsien
Tsinanfu
Poschan
Gefälle
Steigungen

and concessions in the "powder magazines" of the world. The precedent established by the peace conference overturning all previous conceptions about the inviolability of private property in war time, is something that war-makers on both sides of the Pacific should carefully bear in mind.

Little profit can be derived at this stage in speculating upon the possible future status of the railway. As the matter stands, the Japanese government pledged itself orally at the peace conference, and in other documents to convert the Shantung railway and mines into a Sino-Japanese joint enterprise. The details of such an arrangement cannot be arrived at until such time as China is prepared to open direct negotiations with Japan for the settlement of the question. The railway has made wonderful progress under Japanese direction, and the mines are being developed to provide a greater output. The prosperity that has come to Manchuria can be quickly duplicated in Shantung, under some amicable and harmonious adjustment of the present difficulties.



American Consolidation Locomotives Purchased by the Japanese Railway Administration for the Shantung Railway

Undoubtedly, a great opportunity is being wasted. Even biased critics of Japanese activities in Shantung are unanimous in conceding to Japan due credit for the great advancements made in developing its commerce and resources.

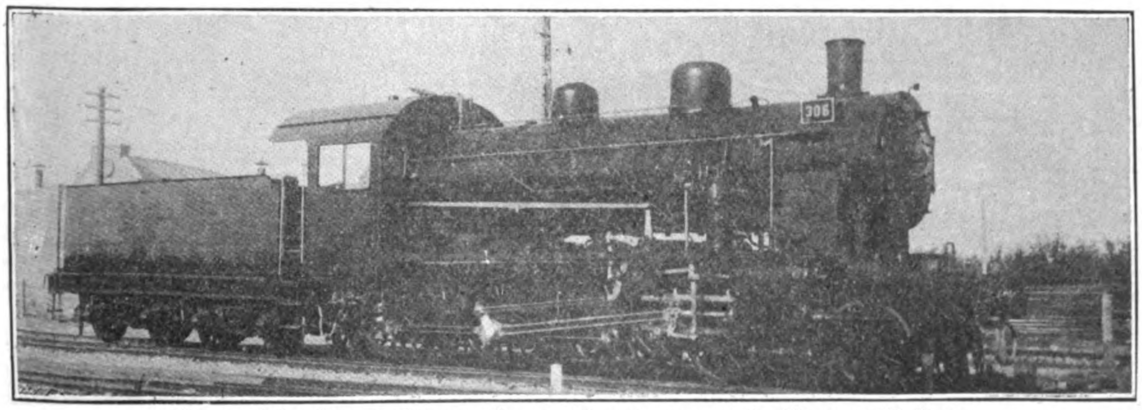
Until such time as China is placed upon her feet and full sovereignty restored in other parts of her vast territory, it seems futile to expect that Japan will surrender rights enjoyed by other powers in other parts of China. Pending such a general solution of China's troubles, there is no good reason why Japan's idea about internationalizing Tsingtau should not be adopted, and the railways and mines operated as joint Sino-Japanese enterprises, with a proper division of administrative control that will assure the continued development of these properties and the port.

Tsingtau is the only good harbor in north China: the natural outlets for the products of a vast lumberland stretching north to Peking and west to Kansu. The small ports of Hulutao, Chinwangtao, or Tientsin, can never adequately serve as the outlets for a great industrialized north China. The natural port for this vast region is Tsingtau. Political questions and international rivalries alone bar the way to the utilization of this natural outlet to its full capacity. British interests lean naturally towards any scheme that will attract this trade into Yangtze Valley outlets, while China, as things now stand, would borrow millions to create a new port on a mud flat, rather than consent to the development of Tsingtau. Early last year, the Chinese government signed a new loan agreement with Belgian and Dutch bankers for the Lung-Hai railway, which provided for the construction of a port at Haichow, as an outlet to the railway. At its best, this harbor can be developed only at the cost of many millions into another dinky little third-rate China coast port, available only to shallow draft coasting steamers. It will always be dependent upon Tsingtau or Shanghai. Why proceed with the waste of good money so badly needed elsewhere for real construction work. The Belgian Lung-Hai line from Hsuchow to the sea at Haichow, where a port must be created, serves no good purpose other than enhancing the value of private properties owned by prominent mandarins, and providing work for the Belgian and Dutch engineers and contractors.

On the north of Tsingtau lies the isolated port of Chefoo, under Chinese jurisdiction, and for the past twelve years, we have been annually told that a railway was to be constructed to connect the port with Weihaiwei; the main object on the part of the Chinese being to divert the trade from the natural outlet at Tsingtau. Here, again, is a port that even with a railway into the interior, can only aspire to a second-rate place in the trade of China.

The solution of this problem would seem to lie in internationalizing the port of Tsingtau and the Shantung railways. Instead of wasting further loans on building the Haichow-Hsuchow section of the Lung-Hai line, the funds could be better utilized in building the line from Hsuchow to Kaomi, and the Dutch could be compensated for the loss of the Haichow-Hailer contract by another equally profitable contract in Tsingtau.

Once the internationalization of Tsingtau is an accomplished fact, the other questions will solve themselves. The Kaomi-Hsuchow project and the expansion of the Shantung railway to Shuntehfu in the Peking-Hankow line, have been pooled by Japan in the Consortium. They have been internationalized. There remains, then, the one problem of the future status of the main Shantung railway; whether it should be operated as a Sino-Japanese enterprise, or whether the higher interests of Japan, China and the powers could best be advanced by internationalizing this line under the Consortium.



Type of the German Express Locomotives in use on the Shantung Railway

With Tsingtau as an international settlement, responsible to some supreme power for the maintenance of order, and the Kaomi-Hsuchow and Tsinan-Shuntehfu lines also internationalized, there ought to be some basis upon which Japan and China would be willing to put the Shantung railway into the common pot. It is unnecessary to say that the "supreme power" must be the rightful sovereign power—China.

If such a solution can be brought about, the way is cleared for progress in north China. The

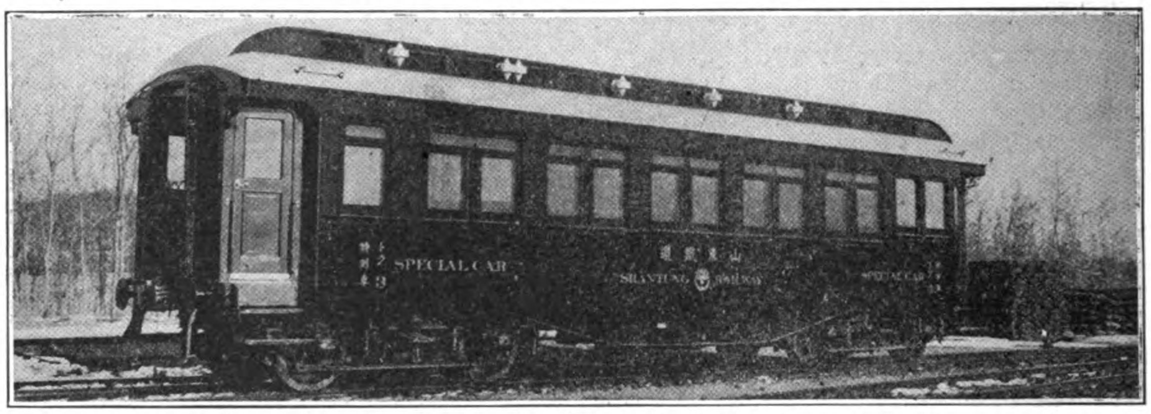
port of Tsingtau will come into its own, and discharge its natural functions as the deep water outlet to the northern half of China. Japan has taken two steps out of the three. She has practically announced her ideas on the internationalization of the port, and turned the Kaomi-Hsuchow and Tsinan-Shunteh projects into the international pot. If approached in the right spirit, she might also take the third step and accept some proposition on the basis of internationalizing the main railway artery through the province.

This is the one way to develop north China and open the door to real equal opportunity for the trade of all nations. Japanese, for the present, own the finest locations and properties in Tsingtau. They have earned the right to this preference by stepping in and doubling the size of the city and the trade of the port. But Tsingtau is capable of great expansion. There is plenty of land, and plenty of water in the bay. There is room for a great city spreading out along the waterfront, with a fine healthy residential section in the hills, the only place on the coast of China that can be compared to Europe or America. If British, Americans, or others do not care to take up properties in the present city, there is plenty of room along the bay for their own business centres. As the commerce of the port increases a newer and larger harbor will have to be built and greater railway facilities provided, so that there will be ample space for those who prefer to "flock by themselves" even in an international municipality, which by reason of the preponderance of Japanese, may be dominated politically by this element.

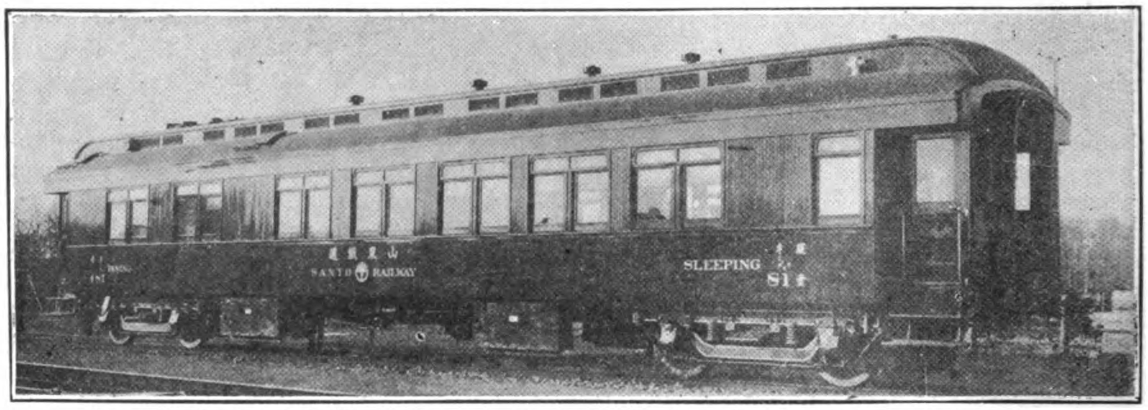
Japan does not want Shantung. She is, however, determined (and properly so) that never again, will her security be menaced by the occupation of Tsingtau as a naval base by any other power. Internationalization of this important harbor would undoubtedly fully meet with Japan's ideas, and the way would then be paved for a full discussion of the many points, involved in the conflict of interests, that would open the door to a great future for Tsingtau.

If Japan concedes something, others should also concede something for the sake of harmony. A little give and take upon all sides would end the interminable international squabble and discord. It would transfer Tsingtau into the real centre of north Chinese activity, the deep-water terminal of a system of railways that would reach far into the interior of China, and make the land throb with a new life.

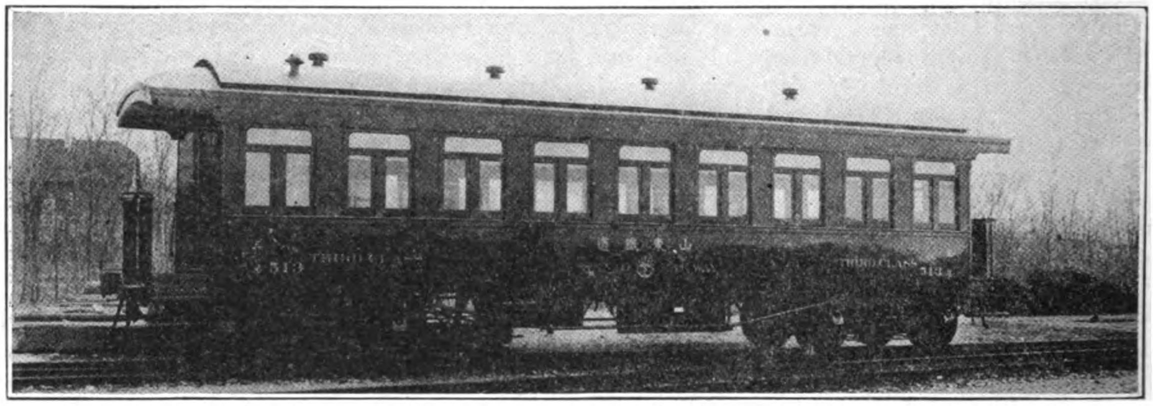
Rolling Stock in Use on the Shantung Railway



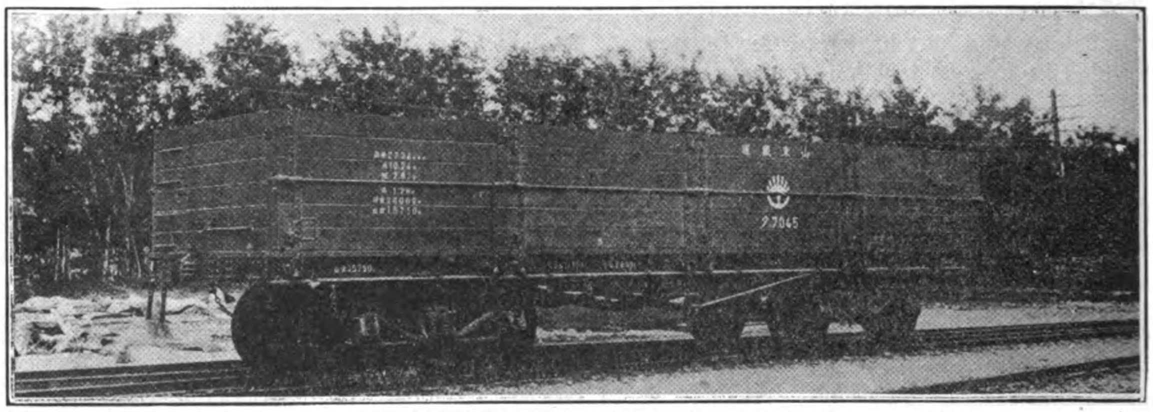
Type of Special Car, built to American Specifications at the Syfang Shops of the Shantung Railway



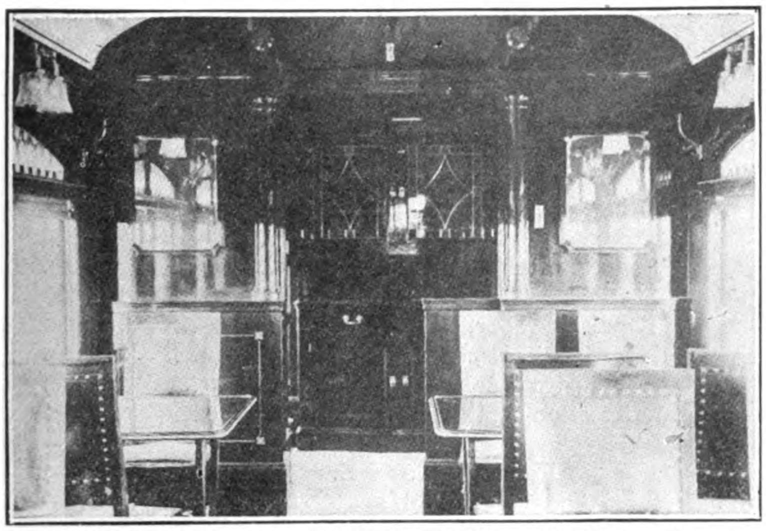
Type of Combined Pullman Sleeper with Twelve Berths and Pullman Diner, built at the Shakako Shops of the South Manchuria Railway for the Shantung Line



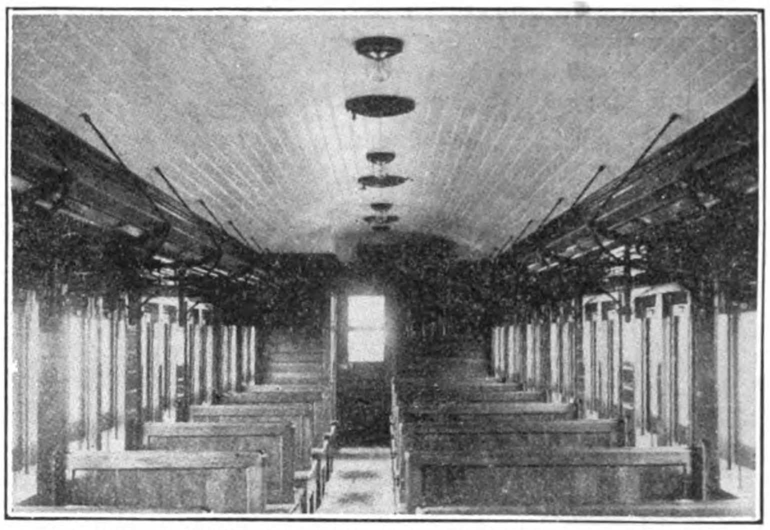
Type of Third-Class Passenger Car, built to American Specification at the Syfang Shops of the Shantung Railway



Type of Thirty-Ton Coal Car, built at the Syfang Shops of the Shantung Railway



Interior of Pullman type Dining Car, built at the Syfang Shops of the Shantung Railway



Interior of Third-Class Passenger Coach, built at the Syfang Shops of the Shantung Railway

The Shantung Railway

(JAPANESE NAME, "SANTO RAILWAY")

The following description of the original German railway is reprinted from the "Shantung Number" of THE FAR EASTERN REVIEW, November, 1914. There is no material change in this data. (Editor)

THE original capital of the German Company was 54,000,000 Marks, but when it took over the rights and property of the Shantung Mining Company on January 1, 1913, the capital was increased to 60,000,000 Marks, divided into 60,000 shares of 100 Marks each.

The grading for the road-bed began on September 23, 1899, at Tsingtau and Kiaochou. The engineers planned a single track, standard gauge line, and work was carried on in both directions, east and west, some 25,000 laborers being employed. Progress was fairly rapid, the grading of the roadbed presenting few engineering difficulties. For the greater part of its length the line runs through flat country, skirting the foot of the mountains in middle Shantung, and dynamite was only employed in a few places in the German leased territory and in a few cuttings on the western section.

Starting from Tsingtau station, which is eight metres above the sea, the railway crosses several low chains of hills between the larger rivers, and on reaching the water-shed of the Yun-ho, attains a height of eighty-eight metres, gradually ascending as far as the city of Tsing Chow-fu. Wide streams such as the Pai Cha-ho, Schykia-ho, and Taku-ho, are crossed before Kiaochou, at the head of the bay, 74 kilometres from Tsingtau, is reached, and thence to Changling, 128 kilometres from Tsingtau, the line passes through a fertile plain crossing the two rivers, Mischui-ho and Kiau-ho. West of Changling the line reaches the hilly country and passes the ranges in long winding curves to Weihsien, 183 kilometres from Tsingtau. Many rivers rise in this part of the country, two of them being spanned by bridges of nearly 300 metres in length each.

Having reached Tsing Chow-fu the line descends to a height of 40 metres near Chow-tsun, and about 20 kilometres west of that city a chain of mountains running from south to north is crossed, the height reached at Wang-tsun being 158.73 metres above sea level. From this point the line gradually descends to Tsinanfu, where the altitude is but 34.80 metres above sea level.

BRANCH LINES.—A branch line, 40 kilometres in length, beginning at Changtien, which is 47.17 metres above sea level, runs in a southerly direction up the Poshan valley, following the course of the Hsiau-fu-ho. The town of Tzechwan, the centre of the coal mines of the Company, is passed en route and the terminal station is at Poshan, 179.40 metres above the sea.

A branch line seven kilometres in length from Setchwan also connects with the Hungchan coal mines; another branch four kilometres in length joins the main line at Fangtze with the coal mines, while another branch at Tsinanfu, eight kilometres in length, gives connection with the Yellow River. In a short time a new branch seven kilometres long will be open to the iron mines at Chinlin-chen, where work has just been begun.

LENGTH OF LINE AND GRADIENTS.—The total length of the main line is 400 kilometres, or 395,373.75 metres, of which there is a level grade of 41.62 per cent. or 164,452.68 metres. The ascending grade from east to west is 29.01 per cent., the descending grade being 29.37 per cent. The straight track totals 299,323.42 metres, or 75.71 per cent., the curves absorbing 24.29 per cent.

The Poshan branch line has a length of 39,200 metres, the level grade being 30.42 per cent., and the ascending grade 69.58 per cent. The straight track totals 27,416.04 metres, or 69.94 per cent., the curves totalling 30.06 per cent.

The steepest grade on the main line is one in 150, and on the Poshan line one in 100. The sharpest curve has a radius of 300 metres.

ROAD-BED.—The road-bed is five metres wide, the slope being one in 1.5. In flat country, where floods occur, the slope is one in 2. Excavations are likewise five metres at the bottom. Ditches wide enough to carry the water which runs from the sides of excavations have been made and lined with cement plaster.

EARTHWORK.—As far as possible excavations of any considerable depth were avoided owing to the great friability of the soil. No tunnels were necessary.

Embankments are protected against the ravages of heavy rains and floods by heavy stone reinforcements of the base, in addition to which the sides have been protected with sod, and trees such as willows, acacias and alders.

BALLAST.—The stone ballast is 4.50 metres wide, and consists either of broken stones (granite or black limestone) or of pebbles, and is at least 35 centimetres thick.

BRIDGES AND CULVERTS.—The total number of bridges and culverts along the line is 1,330. Of these 1,150 are iron bridges,

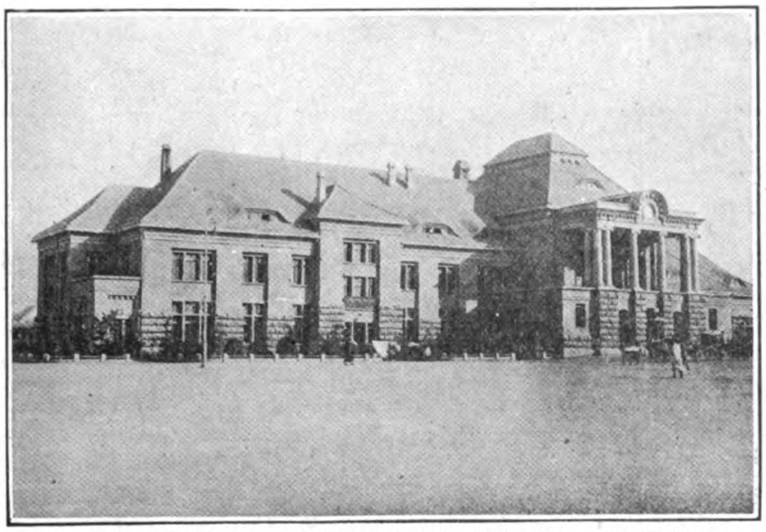
and 280 arch stone culverts. The latter vary in length, the maximum being six metres. The total length of all such culverts on the line is 640 metres.

The spans of the iron bridges vary from one metre to 46 metres, and their total length is 7,700 metres. The longest bridge is over the Tse-ho, 258 kilometres from Tsingtau, the length being 470 metres. The number and dimensions of the bridges more than 50 metres long are as follows: 50 metres to 100 metres, seventeen; 100 metres to 200 metres, three; 200 metres to 300 metres, five; 470 metres, one.

MASONRY.—The total mason work on bridges and culverts amounts to 210,000 cubic metres. The foundations of most of the large bridges are laid upon iron piles 12 to 14 metres long. In a few cases the foundations rest upon caissons.

RAILS AND TIES.—The normal length of the iron rails is 10 metres, and the weight 300 kg. each. The ties are of steel, weighing 50 kg. each. The material was all bought in Germany. The rails are ten centimetres wide at their base, 5.7 centimetres at their top, and are 12.50 centimetres high. The ties are 2.40 metres long and 8 centimetres high.

STATIONS.—There are 55 stations for all kinds of traffic on the main line, and four on the branch line to Poshan. Besides these there are five stations at the end of short branches for receiving cargo only.



The Tsinan Station and Railway Hotel of the Shantung Railway

The majority of the stations have goods sheds. Some important stations have two, the total number of all sizes being 32. European station masters are in charge at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu West.

ROUND HOUSES.—There are 16 round houses, with capacities varying from 4 to 12 locomotives. The round houses at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu are under European control.

TURN-TABLES.—There are eight turn-tables with an inside diameter of 17.50 metres each.

TANK HOUSES.—There are 20 tank houses with water tanks of from 40 to 80 cubic metres each.

PLATFORM SCALES.—There are twelve platform scales of 55 tons capacity each.

OPENING OF THE LINE.—The first section of 74 kilometres to Kiaochou was opened for traffic on April 8, 1901, and further sections were put into operation during the same year. On June 1, 1902, the whole of the first half of the line, as far as Weihsien, was opened for freight and passenger traffic, and on June 1, 1904, the whole line, including the Poshan branch, was opened.

COST OF CONSTRUCTION.—The railway was five years in construction and the entire cost of construction and equipment was 52,901,266 Marks.

Following are the details :—

Land	£ 89,700
Earthwork	148,000
Level crossing and fencings	2,700
Bridges and culverts	728,000
Permanent way	759,000
Signals, blockhouses, etc.	13,200
Stations	106,000
Repairing-shops, etc.	85,000
Materials (coals, etc.)	310,000
Administrative expenses	203,000
Interest on capital, etc.	200,000
Total	£2,644,600

or, including interest on capital, about £9,200 per mile.

The longitudinal section of the road shows that the main line is made up of forty-two per cent. level, twenty-nine per cent. rise, and twenty-nine per cent. fall, with a maximum grade of six per cent. The permanent way has been constructed to sustain ordinary traffic at a speed not exceeding 37.5 miles per hour.

The survey covered in area a strip of land varying in breadth between 500 and 2,000 yards, and cost about £36 per mile, being completed at the rate of ten miles per month. The land was expropriated in accordance with Chinese law, 1*s*. 1*d*. being paid per square yard, with a surcharge of eight per cent. for land in crop and near the townships. The earthwork was sublet in contracts of six miles in length, and was paid for at schedule prices, 1*s*. 4*d*. per cubic yard for ordinary earthwork, and 10*d*. per cubic yard for rock. All bridges and culverts were standardized, as well as the wooden and steel scaffoldings used for erection.

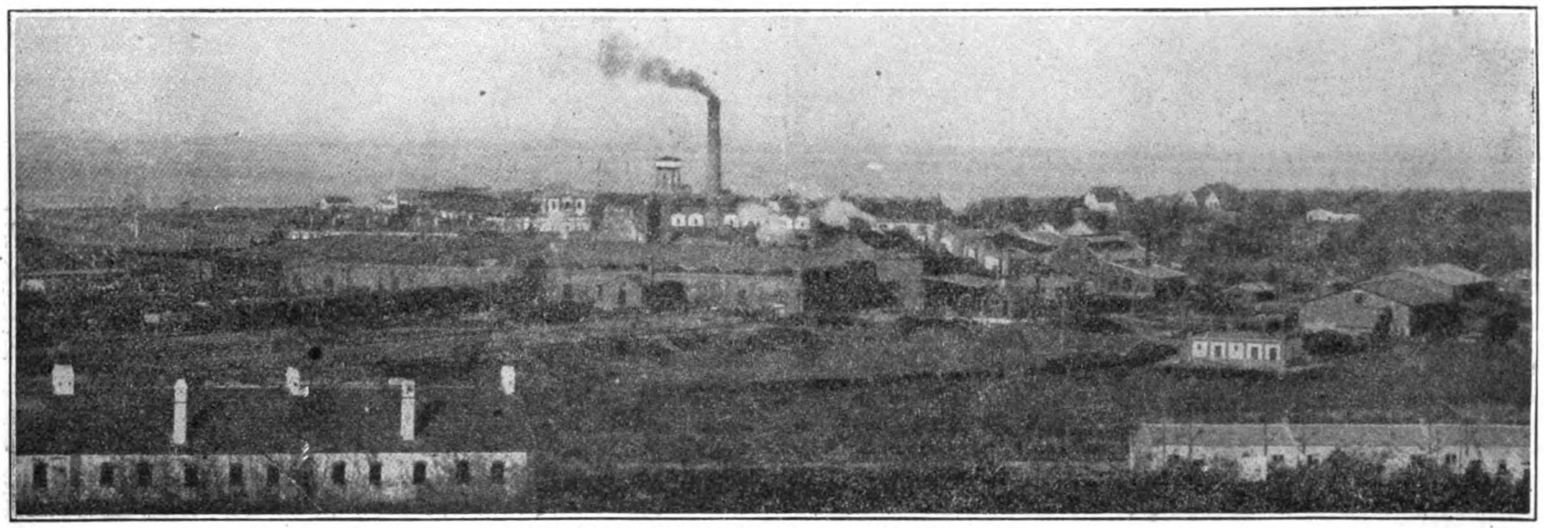
The Shantung Railway, 1921

The above general description of the line still holds good. The best reference to the railway and its work since the above was published was written by U. S. Trade Commissioner Frank Rhea, in his Special Report on Far Eastern Railways published by the department of commerce in 1917. As will be seen from the following notes on the pesent equipment of the line, the tendency of the Japanese is to replace the old German material by the products of American factories. This is in evidence very strongly in the new rolling stock. Twenty-six new consolidation engines have been purchased from America in the last four years. Other car materials to the extent of 2,278,237 silver yen, or on the neighborhood of $1,500,000 gold, has been bought. As will be noted, the total amount of purchases from America aggregate $3,046,468 from 1916 to 1920, about one-third of the total material expenditure during the period. *The budget for* 1921 *calls for the purchase of an additional* 18 *locomotives*, 293 *thirty-ton coal cars*, 11 *passenger coaches and* 12 *cabooses.*

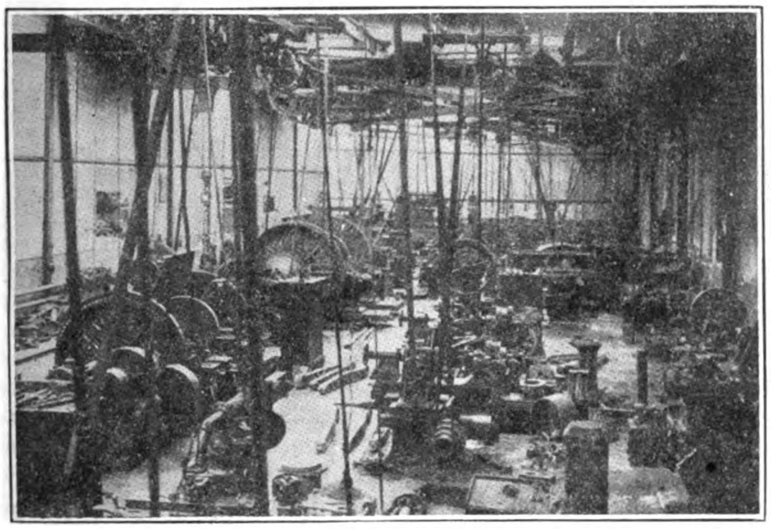
Anti-Japanese Propaganda Destroying American Markets

It is expected that most, if not all, of this material will be purchased from American manufacturers. There is, however, a growing feeling of irritation scarcely percepitible perhaps, but nevertheless existing, that American manufacturers who have derived the largest benefits from Japanese management of railways in China, should be so easily influenced against Japan in political matters by their agents in China. This new development of international trade rivalry in China, led largely by concerns whose business is openly admitted as having been built up on an anti-Japanese basis, is bound to have its effect upon Japanese purchases in America and in other places, unless these practices are terminated. American manufacturers who permit themselves to be drawn into the maelstrom of Far Eastern partisan politics by their China representatives, must, in time, expect to see their business in Japan undermined and handed over to com-

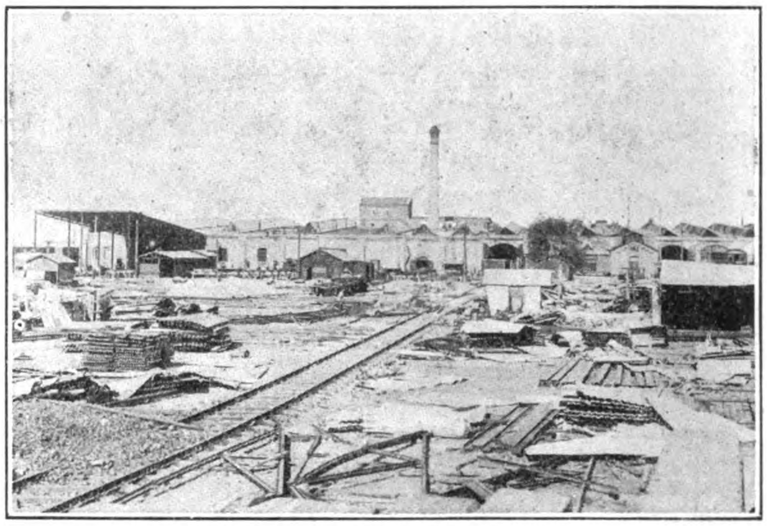
THE SYFANG SHOPS OF THE SHANTUNG RAILWAY



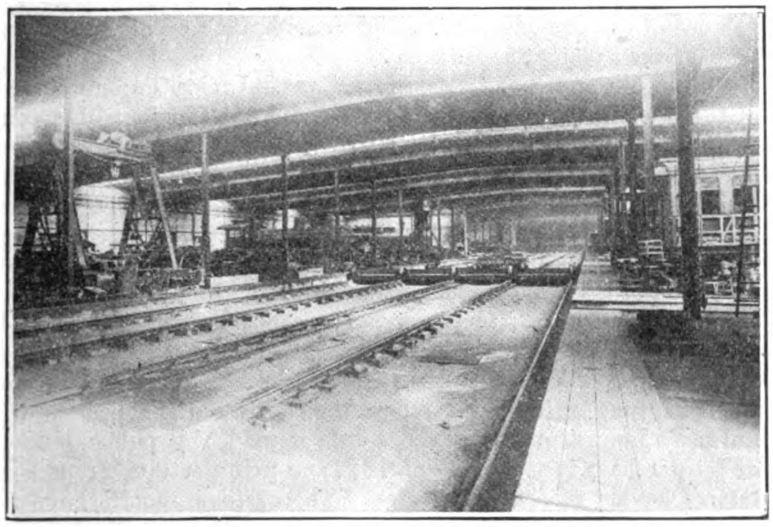
GENERAL VIEW OF THE SYFANG SHOPS

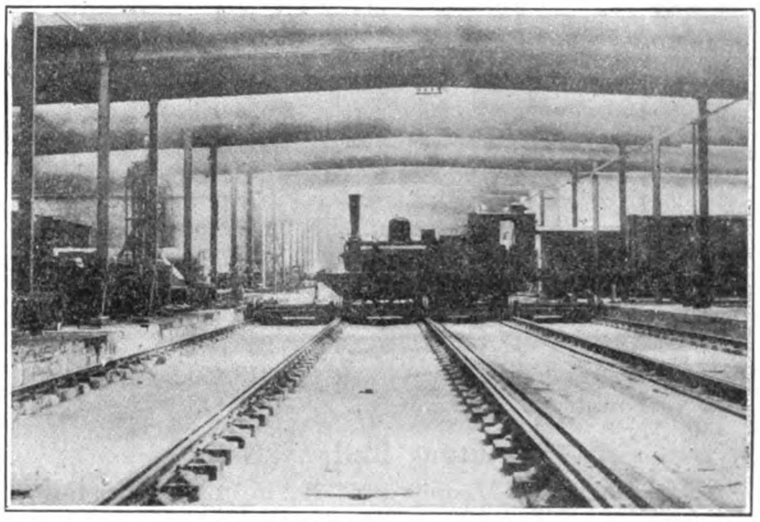


Interior of Machine Shop



The Material Yard of the Shops

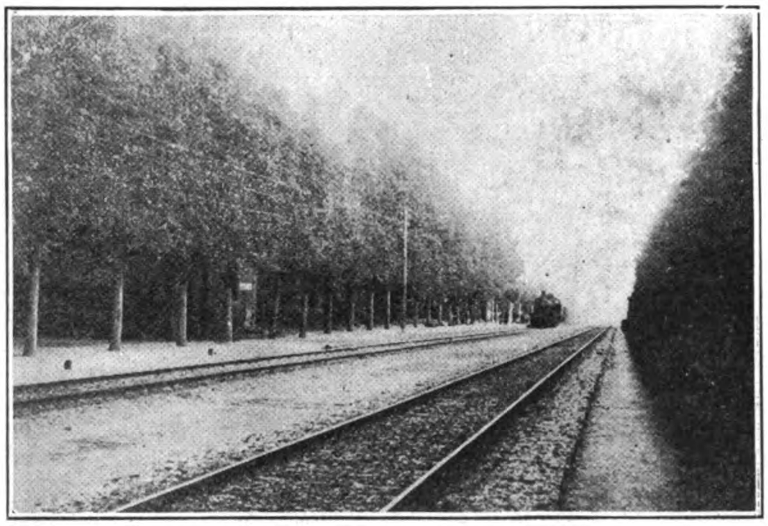




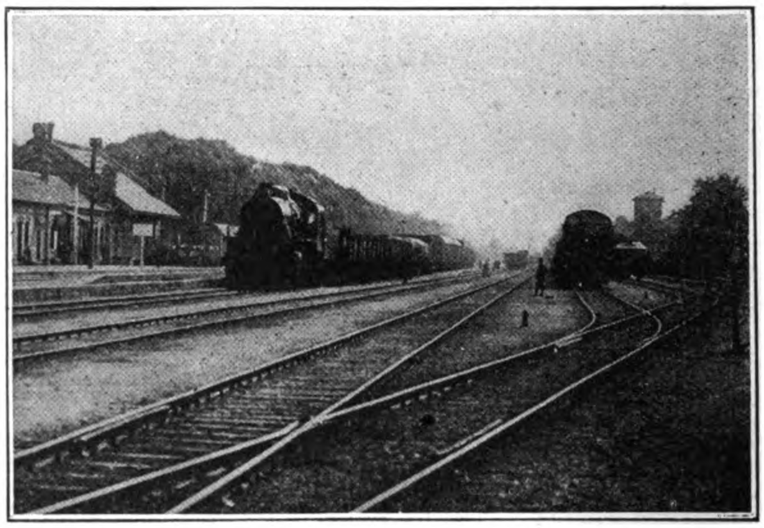
Views in the Locomotive Shops, showing Transfer Table

petitors. For the time being, and for the reason that European manufacturers of railway supplies cannot compete in the matter of deliveries with Americans, these orders from Japan will undoubtedly continue to be placed in the United States, amongst manufacturers taking no part in these political movements. There is, however, strong evidence that Europeans are taking full advantage of the opening presented by this anti-Japanese agitation encouraged by Americans in China, and are pressing the Japanese for such share of the orders as they can at present supply.

The following data on the present equipment and operation of the Shantung Railway is up-to-date, and the most important items extracted from the report of the civil administration dated



Poplar Forest Planted by the Railway Administration at Lungshan Station



The Station at Changtien, where the Branch to the Tsuchuan Mines and Poshan joins the Main Line

November 30, 1920, forwarded to Tokyo, for presentation to the Diet:—

Budget of the Civil Administration, 1921

Total Revenue	Gold Yen	23,513,255
,, Expenditures...	,,	23,513,255
Extraordinary Expenses	,,	8,110,846
Maintenance Expenses	,,	15,402,409

COMPARISON WITH 1920 BUDGET

	1921 Budget	1920 Budget
Revenue	23,513,255	20,138,771
Shantung Railway ...	21,255,602	18,514,726
Various Works at Tsingtau	2,257,653	1,624,045
Expenditure	23,513,255	20,138,771
Civil Administration ...	2,359,258	3,943,872
Railway ,, ...	19,485,887	15,946,923
Communication Dept. ...	1,668,110	1,147,976

REVENUE

	1921	1920
Total	23,513,255	20,138,771
Railway...	21,255,602	18,514,726
Passengers	3,128,650	2,775,037
Freight	8,335,687	7,427,850
Warehouse	149,100	105,150
Coal	5,214,750	4,120,741
Railway	2,025,000	2,400,000
Wharf	1,517,637	1,201,860
Miscellaneous	309,681	180,631
Hospital	75,097	107,277
Different Works at Tsingtau...	2,257,653	1,634,045
Electric	628,589	545,008
Postal	1,026,827	637,131
Stamps	3,835	2,274
Abattoir	259,509	270,778
Waterworks	313,450	186,808
Forestry	25,443	22,046

Shantung Railway Notes

ROLLING STOCK.—*Locomotives.*—No. in 1913, 41 ; in 1919, 79. In the six years that the line has been operated by the Japanese the number of locomotives has been doubled. The number and types of locomotives follow :

Type	6 Coupled	8 Coupled Radial	10 Wheeler			Mogul Forney	8 Coupled	Consolidation		
Symbol	S	R	T	T-1	T-2	M	E	C	C-1	C-2
Number	9	7	17	6	7	4	3	7	15	4

NEW LOCOMOTIVES.—From 1913 to 1915, no new locomotives were purchased. In 1916, three consolidation engines were ordered from the American Locomotive Company. In 1918 four more of the same type were bought from the same company. In 1919, two six-coupled and one ten-wheeled German type locomotives were built at the Syfang Shops, four consolidations were ordered from the Baldwin Locomotive Works, and five more of the same type from the American Locomotive Works, a total of twelve new engines for the year. In 1920, ten more consolidation engines were ordered from the American Locomotive Works. Tenders for 15 locomotives are expected to be ready by April, 1921.

PASSENGER CARS.—The passenger car equipment shows little increase over the total of the German figures for 1913, although many of the old German cars have been scrapped and superseded by others that conform to American practice. The present equipment consists of 122 cars as against 110 for 1913. Private saloon car, 1; special car, 5; combination sleeper and diner, Pullman style, 6; dining cars, 2; 1st and 2nd class passenger coaches, 14; 2nd class passenger coaches, 5; 2nd and 3rd class passenger coaches, 8; 3rd class passenger coaches, 72; baggage cars, 2; baggage and mail cars, 4; mail cars, 3; Total, 122. Exterior and interior views of these cars are seen on pages 90, 91. The combination sleeper and dining car is built to the Pullman pattern, and fitted with the most up-to-date appliances, toilet, wash room, etc. These were built at the Shakako Works of the South Manchuria Railway. The balance of the passenger and freight cars have been assembled and built at the Syfang Shops.

FREIGHT AND SPECIAL SERVICE CARS.—Under German control of the line, the report for 1913 returned 1,051 freight and special service cars. These have been increased to 1,416 under Japanese management. The greatest increase is in the covered or box cars, whose number in 1913 was 283, and in 1920, 361. The number of coal cars in 1913 was 557, and in 1920, 708. The present equipment consists of:—box cars, 361 ; gondola cars, 34; timber cars, 100; coal cars, 708; ore cars, 50; coke cars, 75; lime cars, 20; stoke cars, 1; fish cars, 3; tank cars, 13; cabooses, 46; tool cars, 4; weigh bridge calibrating car, 1. Total, 1,416.

PURCHASES OF MATERIALS.—The purchase of materials for the Shantung railway is under the bureau of finance of the railway administration, and as a rule is made by public tender, or by purchase in the open market from manufacturer's representatives having offices in Tsingtau. The customs reports have no record of imports of railway materials, as the railway being a government concern for the present, pays no duty under the provisions of the German treaty. Considerable purchases have been made in Japan especially from the Japanese Government Steel Works at Yawata, to which the railway is under contract to supply about 150,000 tons of iron ore, f.o.b. Tsingtau annually. Since 1916, the railway authorities have purchased materials to the total value of 15,418,839 in silver yen. The value of the silver yen has varied greatly with the fluctuations of the metal, but it is fair to strike an average of .66 gold for the period under

survey, or a conversion into gold of approximately $10,397,226. The actual cost of construction of the railway was given in the German official report as 2,644,600 pounds sterling, or, about $13,000,000 gold.

PURCHASES FROM THE UNITED STATES.—As in the case of the Japanese operated South Manchuria Railway, the management of the Shantung line has purchased about one-third of its total materials from American manufacturers. The following official statement will show how these American purchases have been distributed during the five years ending 1920:—

	Silver Yen
Steel and Iron	592,199.737
Lumber, ...	124,536.468
Special Brick	14,166.920
Paints	32,548.012
Office Furniture	26,842.116
Machine Tools	399,384.780
Rails, Points, etc.	199,525.517
Rolling Stock	2,278,237.226
Cast and Rolled Pipes, Fittings	141,707.648
Electrical Materials	28,603.885
Bolts, Nuts, Rivets	18,680.505
Oils	461,881.995
Building Materials	14,387.949
Stationery	12,613.178
Miscellaneous	224,587.363
Total	4,569,703.229

or, at the same rate of exchange (.66⅔) about $3,046,468 gold.

Under German direction. American and other European manufacturers supplied nothing, not even a nail, to the Shantung Railway. The Japanese have opened the door to American materials and converted the line into one on which American specifications and practice predominate. Westinghouse air brakes have completely supplanted the old German equipment, American boiler tubes, Worthington pumps, car-heating and lighting apparatus, couplers, etc., are found on all the cars. Riding in a comfortable Pullman, one sees rows of American locomotives sticking their heads out of the round houses as the train passes through divisional headquarters. It is not, however, until the workshops have been visited, that standardization of the line along American principles is fully appreciated.

WORKSHOPS AND EQUIPMENT.—The main workshops of the Shantung Railway are located at Syfang, a short distance from the Tsingtau terminal. Originally of moderate size to meet the requirements of the German line, the shops have been considerably enlarged under Japanese management. During 1920, an iron and brass foundry was added. A few locomotives have been completely constructed at these works, and all the cars are now made here. About 10 freight cars per month are built at the shops, wheels, axles and fittings coming from America. In 1920, the shops built 10 first and second-class passenger cars and 150 freight cars. A typical 30-ton coal car and special car turned out at the works are illustrated on page 89. The equipment of the workshops is largely American, and the extent of the purchases from 1916 to 1920 can be seen from the following official memorandum:—

Year	Machine Tools, etc.	Materials	Total
1916 ...	9,603.200	59,527.780	69,130.980
1917 ...	31,026.560	—	31,026.560
1918 ...	34,685.070	145,824.090	179,809.160
1919 ...	123,100.710	71,813.380	194,914.020
Totals ...	198,415.540	276,465.180	474,880.720

The above figures are in silver yen, and at an exchange of .666, the total is equivalent to $316,586 gold.

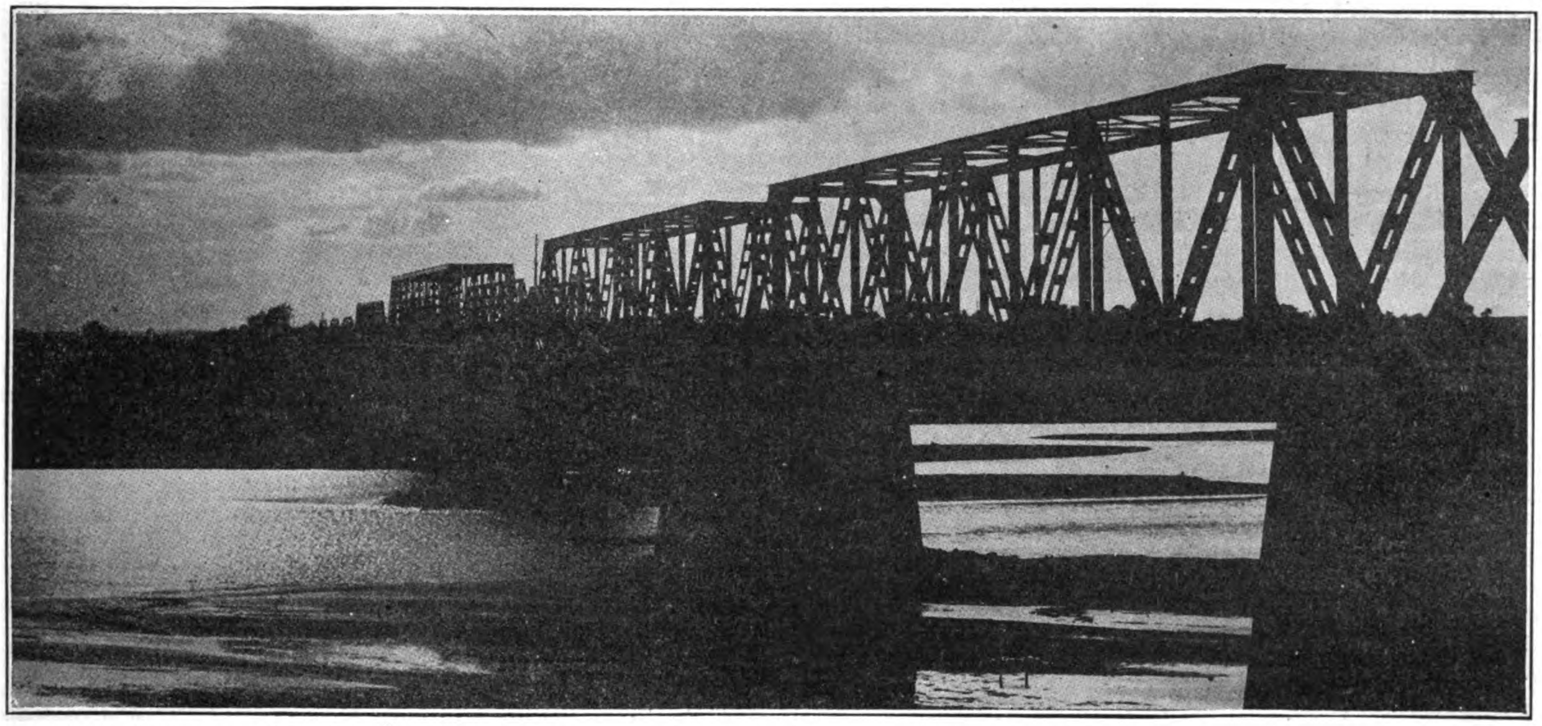
The purchases for 1920 amount to 222,236.99 in gold yen, for machine tools, and 467,178.60 gold yen for materials, a total of G.Yen 689,415.59, or $394,707, a grand total of $661,293, expended in five years for American machine tools and materials.

Some of the more important machine tool purchases are enumerated below with their prices in silver or gold yen.

1916. One 20-in. drilling machine, Y.1,232; one 4-ft. 6-in. radial drill, 1,844; one vertical screw power testing machine, 4,305 (silver yen).

1917. One Harty flue welding machine, 2,340; one screwing machine, 3,250; one bolt and rivet making machine, 9,899; one half-ton air hammer, 8,856; one air compressor (silver yen).

1918. Three pneumatic drills, 2,480; dies and headers, 2,419;



Railway Bridge over the Taku-ho, at Kilometer 114, length 272 meters. The centre span of this Bridge was carried away by a flood in 1917 The Repairing and Strengthening of this Bridge is the only important Work of the kind carried out under Japanese Management of the Railway

all geared drilling machine, 2,234; universal radial drilling machine, 2,239; universal milling machine, 5,427; one steam hammer, 17,455 (silver yen).

1919. One reversible motor drill, 1,918; 30-ton locomotive crane, 57,630; one all geared drill, 3,207; wheel lathe, 16,354; Fosdick radial drill, 3,988; Harkness flat turret lathe, 4,515; 24-in. back geared shaper, 2,294; 16-in. crank shaper, 2,730; all geared 24-in. drill, 1,975; universal milling machine, 3,950; 3-ft. high speed plane radial drill, 2,495 ; Sibley sliding head drill, 28-in. 2,500; Barnes 34-in. sliding head drill, 1,075; Ryerson slotting machine, 8,234; 6-in. Davis high speed cutting off machine, 2,940 ; Landis boly cutter, 1,495; etc. (silver yen).

1920. Prices in gold yen. One link grinding machine, 19,970; gap grinding machine, 12,000; boring and turning mill, 15,800; guide bar grinding machine, 17,000; air compressor, 30,000; air receiver, 3,365; electric drill motor, 3,834; 79-in. heavy driving wheel lathe, 45,700; cylinder boring and facing machine, 50,600; Ansonia friction testing machine, 8,060; motor, 2,850; electric arc welding machine, 8,470; universal flue cleaning machine, 2,529.

Track Materials, and Bridges.—The Germans laid the line with a specially designed rail weighing about 60 pounds but with a head and girder strength equivalent to 70 pounds American standard. A considerable stock of rails and joints were left by the Germans, which have been utilized by the Japanese in repairing the line when necessary. Wherever they have had occasion to purchase new rails for the short extensions and special work, they have used a 70 pound rail, which, I understand, has been furnished by the Japanese Government Steel Works at Yawata. The practice of replacing the old rail with the heavier one will be carried until the line is entirely laid with the 70-lb. rail. There has been some talk of double tracking the line, but conditions do not as yet warrant such an expense, at least, not until further extensions towards the west are carried out. The rails are laid in steel ties of German design which have given excellent results, but the Japanese are replacing these gradually with wooden sleepers.

The uncertainty as to the future status of the line arising out of the delay in arriving at a settlement of the Shantung question, has contributed to postpone any radical improvements which must be carried out before the railway can fulfill its legitimate function in developing the province. The rapidly increasing volume of freight can be economically hauled only by the use of heavier trains and locomotives, but here the Japanese management are confronted by the lightness of the bridges designed for loading not in excess of Cooper E-35. The total number of bridges and culverts along the line is 1,330. Of these 1,150 are of steel. The spans of these bridges vary from one meter to 46 meters, and their total length is 7,700 meters. The longest bridge is over the Tse-ho, 470 meters. The number and dimensions of the bridges over 50 meters long are as follows:—50 to 100 meters, seventeen; 100 to 200 meters, three; 200 to 300 meters, five; 470 meters, one.

In 1912, the total volume of freight carried was only 717,189 tons. In 1920 this had increased to 1,733,375 tons, about 150 per cent. In order to handle the constantly increasing traffic which must come from the development of the coal and iron mines, the Japanese are desirous of replacing the light bridges with heavier structures in order to increase the size and weight of locomotives and trains. This important work, however, cannot be undertaken until the political questions are settled and a final agreement reached as to the future ownership and management of the railway and mines.

Under these conditions, no new bridge work has been carried out under the Japanese management, except in the few cases where it has been necessary to replace those destroyed by the Germans in 1914, and the few spans carried away by flood action. In this connection, the only important piece of work has been the reconstruction of the bridge at Km. 144 over the Taku-ho, the central pier of which gave way under a heavy flood. The bridge has been greatly strengthened in the rebuilding.

Passenger and Freight Receipts

Year ending Nov. 1919 No. of Passengers	Year ending Nov. 1919 Receipts	Year ending Nov. 1920 No. of Passengers	Year ending Nov. 1920 Receipts
2,145,152	S. Yen 1,467,573	2,550,050 tons	S. Yen 1,994,271
	Express Packages		
1,654 tons	„ 52,902	1,516 „	„ 54,892
	Freight		
946,412 „	„ 3,449,140	1,031,363 „	„ 3,758,996
	Freight		
732,700 „	—	826,785 „	—
	Miscellaneous		
43,446 „	—	—	, 41,524
	Total Freight		
1,679,112 „	—	1,858,148 „	—
	Total Receipts		
—	„ 5,013,461	—	„ 5,849,683
	WHARF REVENUES		
—	„ 669,964	—	„ 706,246
	WAREHOUSE REVENUES		
—	„ 68,293	—	„ 91,714

Output of Mines

1919		1920
425,106 tons	Szuchuan Coal Mines	504,250 tons
54,687 „	Fangtse Coal Mines	120,551 „
479,793 „	Total Coal Output	624,801 „
114,751 „	Chinglingchen Iron Mines	122,935 „

Total Revenue and Expenses of Railway Department

Year ending Nov. 1919	Rev. G.Y. 11,729,070	Exp. G.Y. 15,220,823
„ 1920	„ 17,419,584	„ 18,174,295

Receipts.—The receipts for 1919-1920 are classified as follows:

	1919 (Gold Yen)	1920 (Gold Yen)
Passenger	2,709,481	3,666,568
Freight	5,790,998	6,374,109
Miscellaneous	229,562	325,405
Coal Sales	1,734,834	3,407,913
Wharf Receipts:.	1,176,721	1,197,705
Warehouse receipts	88,272	219,501
Iron Ore	—	1,947,637
Total	11,729,070	17,338,839

Railway Expenses.

	Year ending Nov. 1919	Year ending Nov. 1920
Extraordinary Budget 1914	15,220,823	14,438,791
Salaries and Wages:—		
Officials	527,525	507,979
Employees	335,519	312,036
Laborers	161,199	158,540
Bonuses and allowances	100,753	216,899
Temporary allowances (equalization of exchange)	432,982	747,276
Travelling expenses	30,005	37,402
Clothing and uniforms	8,024	7,457
Postage	1,587	1,282
Stock Feed	695	2,361
Medical	—	27,697
Materials	1,190,188	1,596,044
Other purchases	228,455	348,361
Maintenance	319,924	374,650
Rolling Stock	585,651	730,014
Operating	6,528,724	5,925,060
Miscellaneous	46,249	104,225
Refunds...	980	442
Mining Department	4,097,947	4,625,800
Chinkingchen Iron Mines	2,187,766	819,288
Ssuchuan Coal Mine Equipment	152,313	——

There is a supplementary or Part 2 to the expenditures for the communication department of the civil administration up to

September 1920, which has not been translated in time for this article.

Organization and Management

The management of the railway is directly under the civil administration of the Tsingtau government. On October 1, 1917, a new set of regulations for the management of the line was promulgated, which, according to other competent authorities, is very complete and comprehensive. Trade Commissioner. Frank Rhea, whose splendid report on Chinese railways was issued by the Department of Commerce in 1919, remarks concerning these regulations, as follows:

"Two points that merit particular attention are, first, the inclusion of the mining operations under the direction of the railway department; and, second, the provision of a "bureau of traffic control." This latter represents a partial step toward the commercializing of the railway, but, as this bureau also has charge of the station-operating forces, it is not a distinctly separate branch, like the traffic department of our American railways. This organization, like that of the South Manchuria Railways, shows the careful and painstaking arrangements that the Japanese have taken to insure success." The following is a translation of the Japanese text of the ordinance of October 1, 1917, putting into effect these regulations:

ARTICLE I.—The following five bureaus shall be established in the railway department of the department of civil administration in the Tsingtau army headquarters and a chief shall be appointed in each bureau: bureau of general affairs; traffic control; operation; engineering; finance.

ART. II.—The bureau chiefs shall be appointed from railway secretaries or railway engineers, and they shall control their respective affairs, supervising their staffs under the direction of the director of the railway department.

ART. III.—The bureau of general affairs shall have charge of the following business: (1) Confidential matters; (2) personnel; (3) correspondence, compilation of rules, etc.; (4) investigations and statistics; (5) assignment of quarters; (6) training of employees; (7) leasing of houses and lands; (8) all matters not included in the functions of other bureaus.

ART. IV.—The bureau of traffic control shall have charge of the following business: (1) Traffic on the railways; (2) distribution of cars; (3) warehousing.

ART. V.—The bureau of operation shall have charge of the following business: (1) Operation of trains; (2) correspondence relating to operation; signaling; and conduct of railway.

ART. VI.—The bureau of engineering shall have charge of the following business: (1) New construction and repairs, railway, and buildings; (2) operation of electric power houses for railway purposes; (3) control of lands and buildings in railway use.

ART. VII.—The bureau of finance shall have charge of the following business: (1) Preparation of the budget and the settlement of accounts; (2) receipt and disbursement of cash and properties and custody thereof; (3) purchases of materials and disbursements in connection therewith; (4) inventories of properties.

ART. VIII.—The wharf office shall be established within the railway department and shall have charge of the docking and clearing of vessels, the loading and unloading of cargo, and control of the wharves and properties connected therewith.

ART. IX.—A workshop shall be established in the railway department and shall have charge of the designing of rolling stock and machinery and the construction and repairing thereof.

ART. X.—The bureau of mines shall be established within the railway department. It shall be composed of three sections: (1) business, (2) excavation, and (3) sale, which shall have charge of such matters as underground work in the mines, allied manufacturing industries, sale of products, and control of the properties.

ART. XI.—The details of the organization and operation of the different bureaus, the wharf office, the workshop, and the bureau of mines shall be determined by the director of the railway department with the sanction of the commander-in-chief of the Tsingtau garrison.

At the present time there are 9,362 employees on the salary list in addition to 3,954 Chinese and 1,128 Japanese day laborers.

Proposed Rebate System.—In order to promote the industrial development of Tsingtau, a proposition has been submitted to the Japanese Diet, for the approval of freight rebates on certain raw products destined for factories located within the Leased Territory. Rebates are also proposed for summer shipments of coal and coke from the mines to the sea port, in order to stimulate production during the slack season and obviate the rush for cars during the winter. Wheat and flour also come within this new project.

Shantung Coal and Iron Mines

The Fangtze Group

I.—The Wei-hsien Coal Fields

THE coal fields of Wei-hsien are remarkable for the irregularity in the distribution of its coal seams; and the preliminary boring trials indicated that the whole of the surrounding country was at one time the scene of violent volcanic eruptions, which so disturbed the coal deposits that nearly a whole year was lost by the mining engineers in finding a continuous seam.

The theory advanced to account for the pockets of coal embedded in the granite which were discovered and exploited by the Chinese is that the action of water on the uneven surface of the subsidiary bed of granite caused deposits of coal-forming vegetable matter in the crevices, where they could not be washed away, leaving the upper surface of the granite bare. The remains of the Chinese shafts are distributed in small clusters where these pockets are found, and are separated from each by the out-cropping granite. As the Chinese miner cannot go deeper than 180 feet, on account of his inability to cope with the increasing volume of water which has to be removed to permit of work being carried on, it is not known how deep these pockets are. Their lateral area is, however, so small that the Chinese have practically ceased to mine them; and as they were valueless as mines worked under modern principles, the engineers turned their attention to other places where coal had not been found on the surface. After boring for a year, during which only granite and volcanic tufa were found, they struck a seam of coal about 9 feet thick, at a depth of 450 feet, running from north-east to south-west. A shaft was sunk, and mining operations commenced. The Wei-hsien coal is bituminous containing about 30 per cent. of gas; it burns with a clear flame, and does not cake like the Japanese coal, and it has also the advantage of having a lighter smoke.

As a result of the special investigation of the Wei-hsien fields, the company decided to erect mining works there to provide for an output of from 600 tons and a probable increase to 1,000 tons daily. This work was commenced in 1901. When the mine

was opened it was found there were three strata, the top one of which 2 metres thick was not worth mining ; 40 metres beneath this in a depth of 175 metres the principal stratum was found of about 4 metres depth. The coal contains about 30 per cent. of gas and about 15 per cent. ash, and shows a heating power of almost 7,000 calories. Porphyrite presses closely on the coal in parts. A third stratum 35 metres further deep, of about 3 metres depth, is shown to be robbed of a great deal of its gas in parts by the porphyrite, but in better situations has still 20 per cent. of gas, although unfortunately it contains quite as large an amount of ash. Mining was therefore possible only in the principal layer, whilst the under stratum was used as far as possible for inland supply. As expected, the coal was used largely, for stationary boilers and heating coal in the private and industrial establishments in the neighboring region and the regions beyond as far as Chingchoufu.

The output did not prove to be so large as was expected at first, so it was decided to make no further extensions to the mine, but to return to Hungshan where the second of the mines belonging to the company is situated.

The statistics of the Wei-hsien mine for the various years were as follows :—

1902/03	... ... 9,178.62	tons
1903/04	... ... 50,601.03	,,
1904/05	... ... 100,631.06	,,
1905/06	... ... 136,990.00	,,
1906/07	... ... 164,437.05	,,
1907/08	... ... 149,307.00	,,
1908/09	... ... 250,214.05	,,
1909/10	... ... 273,354.05	,,
1910/11	... ... 193,497.05	,,
1911/12	... ... 205,185.00	,,
1.4.12-31.12.12-126.215,00 tons 1913	... 199,000.00	,,

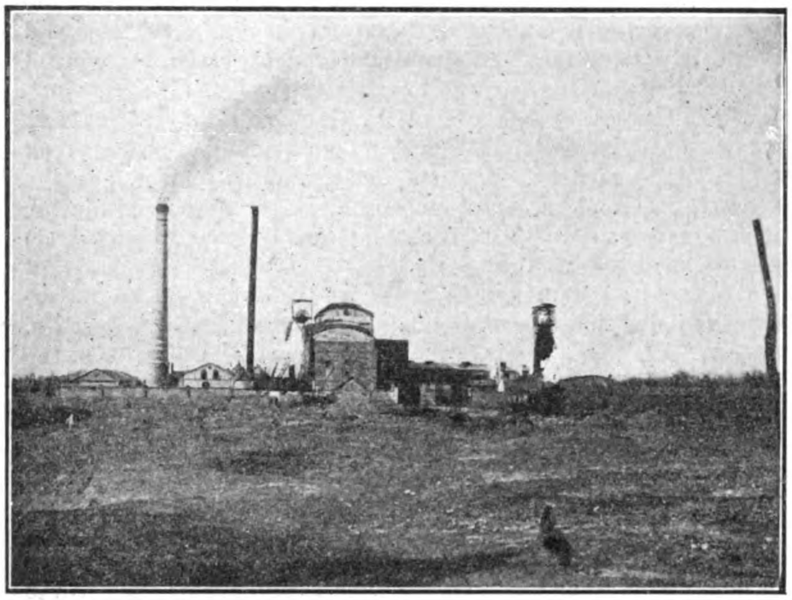
The works in Fangtze comprise a double shaft, a large repair shop with foundry, saw-mill, coal separation and shipping department, coal washer working at rate of 80 tons daily, a briquette manufactory for 30 tons daily output.

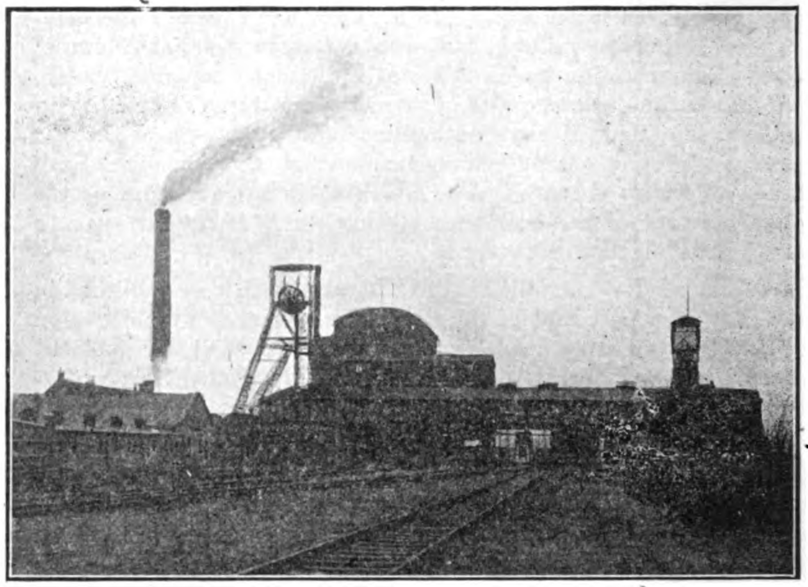
There were on the average about 25 Europeans employed in Fangtze, and 2,000 Chinese. The Europeans lived in a colony together.

In the photographs given, No. 1 shows the works with coal washer and briquette factory seen from the south, picture No. 2 shows the mine entrance from the west, pictures 3 and 4 the arrangement of both shafts viewed from the east side.

The above official description of the old German Fangtze mines is reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914. The following data on the actual condition of these workings was obtained by the publisher of THE FAR EASTERN REVIEW, upon a personal visit on January 16, 1921.

It appears that the Germans disabled some of the machinery at the main Fangtze mine, described above, with the consequence that the mines became flooded, and it has been impossible to get them again in working order. The Japanese have, therefore, concentrated their efforts in sinking other pits in the adjacent coal-bearing area, trying to reach a deposit or veins whieh will warrant extensive exploitation. The general location of these new pits and test shafts are shown on the map of the district.





THE FANGTZE COAL MINE—GENERAL VIEWS FROM THE EAST

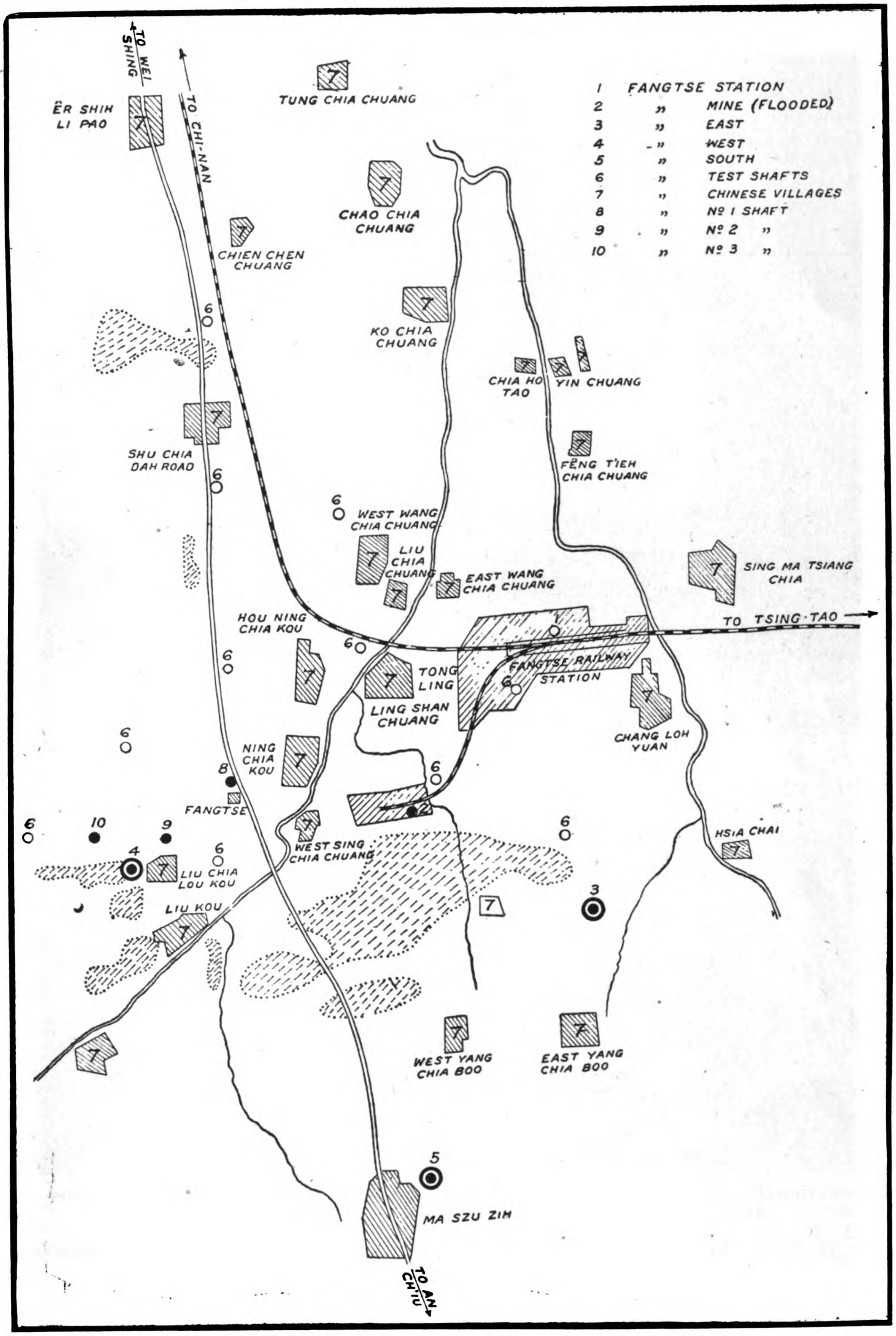
This mine is completely flooded and has been abandoned by the Japanese. The hoisting engines and other machinery have been dismantled and installed at the Shilichuang Branch Mine of the Tsuchuan Colliery in the Poshan district. The Briquette Plant remains intact and is now being repaired and placed in working order to manufacture briquettes for the use of the Japanese navy.

II.—Fangtze East Mine

This mine is one of the new ones opened by the Japanese about one mile south-east of the original Fangtze shaft sunk by the Germans. A shaft has been sunk to a depth of 236 feet, the level of the old Chinese workings, and a 30° incline driven to a depth of 324 feet, where a new coal body is being developed. The output from March to December 1920, was about 30,000 tons, all of which was sold within the province or deposited in the Central Fangtze yard. Its present output is approximately 150 tons per day, but could be rapidly increased by the employment of extra labor. The output is regulated at present by the railway budget appropriation for its working. The hoisting engine installed last year is from the Fukuoka Iron Works, of Kyushu, Japan. The reare three boilers, two of which were taken from a Japanese warship, and the third is a Lancashire type from the Sakaigawa Iron Works of Osaka.

III.—Fangtze West Mine

This mine, located two miles to the west of the main Fangtze shaft, producing about 100,000 tons per year at present, is the most important of the new shafts sunk by the Japanese. There are four shafts from 120 to 130 feet deep, 1 for hoisting, 1 for workmen and materials and two for ventilation. Constant pumping is necessary to keep the galleries free from water. There are twelve pumps installed underground. The Japanese engineers an driving a 10° incline 1,014 feet long from the 120 feet level and hope to



Map of the Fangtze Coal Region, showing New Mines and Test Shafts being worked by the Japanese

strike the lower coal strata at 330 to 350 feet. Other galleries are being opened at the higher level.

The mechanical equipment is a hodge podge of second-hand material, which, however, fully answers the purpose for the preliminary development work now in progress. Three marine and three small Lancashire boilers, an old German hoisting engine and a nondescript belt driven dynamo complete the plant.

In 1920, the output was about 100,000 tons, but is now about 200 tons per day. When working at the maximum of 380 tons per day, about 800 miners are employed, but with the present output of 200 the force is 450. There are 28 Japanese employees of all kinds.

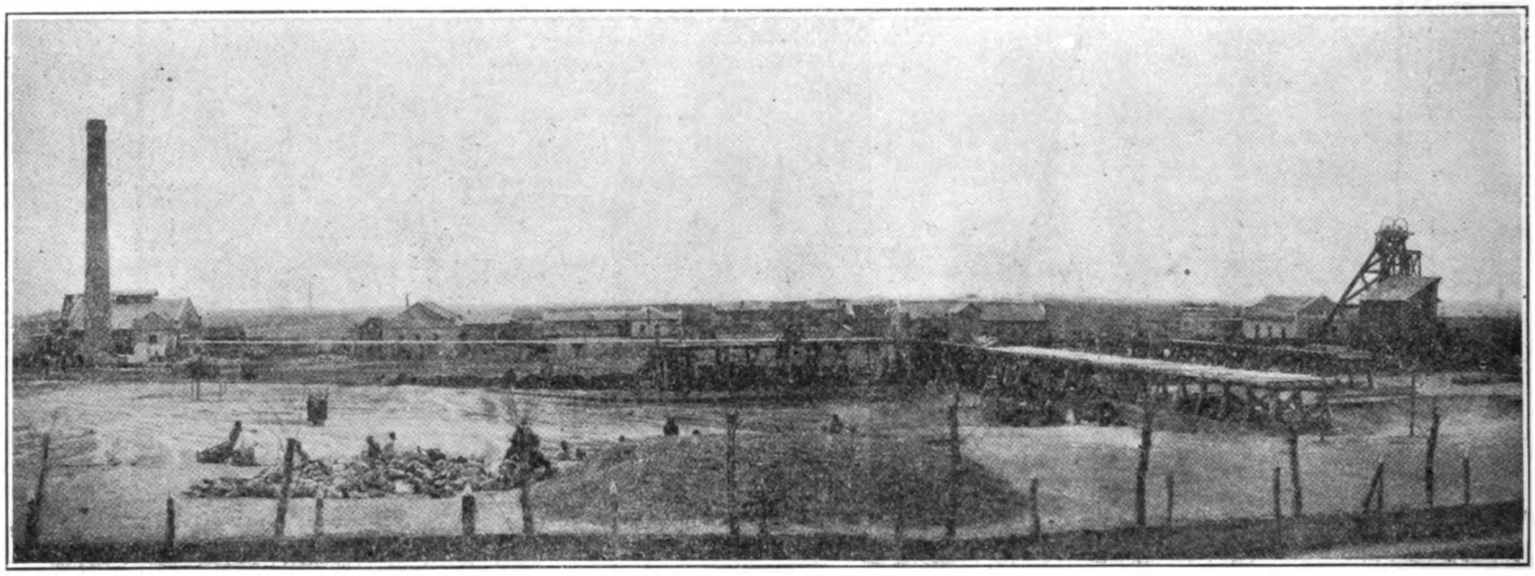
IV.—Fangtze North and South and Central Mines

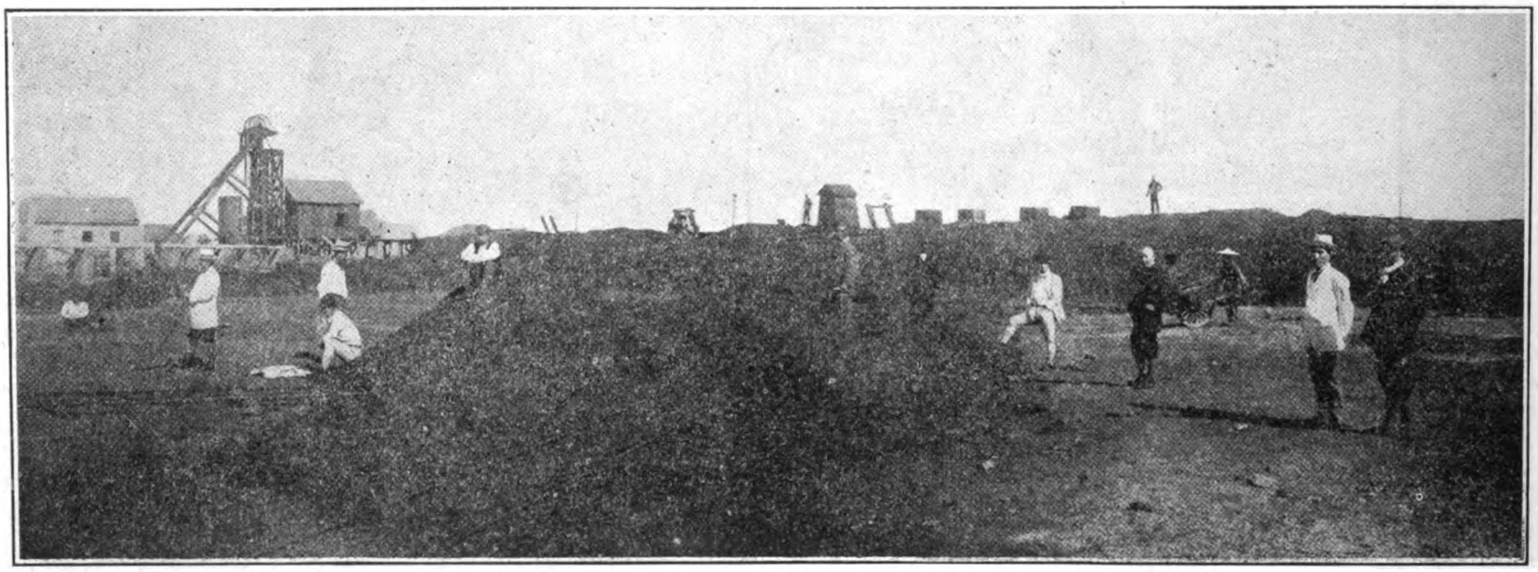
The original German workings extended underground on a general easterly direction from the Fangtze shafts, but as these have all filled with water, the Japanese have sunk other shafts far enough away from the old workings in order to tap the veins in more favorable places. In addition to the east and west mines above described, the Japanese have sunk shafts in what are called, the North, South and Central Fangtze Mines. The north and central shafts as yet are not producing, while the south mine had a very nominal output for the last year. This group is still in process of development, and are largely in the nature of tests. Several other test shafts have been sunk in the vicinity as will be noted on the accompanying map, but as yet no reports are available as to the results obtained.

V.—The Old Fangtze Mine

The original Fangtze mining works opened by the Germans comprised a double shaft with large repair shop with foundry and saw-mill, coal separator and loading bins, washing machine working at the rate of 80 tons per day, and a complete briquette plant having a capacity of 30 tons per day.

The main hoisting plant and other essential machinery of this plant has been dismantled and set up at the Shilichuang branch of the Tsuchuan mine. Only the briquette factory remains intact. The complete machinery for this plant came from Schuchtermann and Kremer of Dortmund. The two briquette machines, mixer and dryer are all of the Couffinhal system. In addition to the main briquette machines, there is a smaller one for making egg coal or boulets for house consumption. This entire plant with its main engine, elevators, shafting, etc., all of the best workmanship, installed in a separate building, fitted

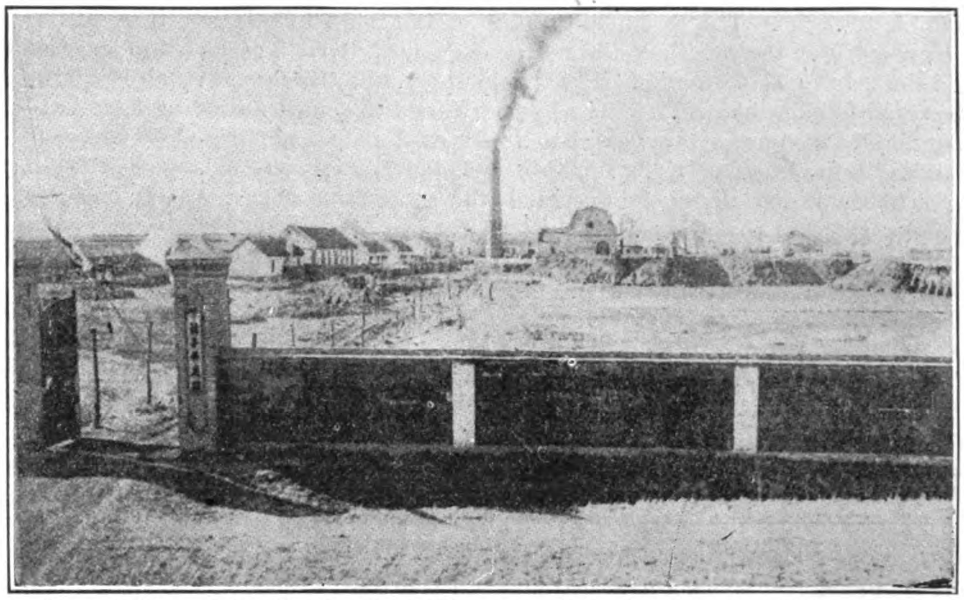




Views of the Fangtze East Mine, opened by the Japanese and now producing about 150 tons per day, while development work is in progress

with iron gallaries, staircases, etc., is perhaps the most complete and finished mechanical installation in the province of Shantung. A large pile of fresh briquettes on the loading platform bears evidence that the plant has recently been tested out, and when I went through, I found that the machinery was being cleaned and overhauled. As most of the coal from the Fangtze east and west shafts is dust, burning with little or no smoke, it makes an exceptionally good fuel for warships. I was told that an attempt would be made to re-open the briquette plant utilizing this dust coal from the near-by shafts, selling the product to the Japanese Navy.

Both the Fangtze east and west mines send their output by gravity cars to the main Fangtze works, which is used as a storage and railway loading station, thus keeping a constant supply of dust coal to operate the briquette plant at full capacity.



General View of the Fangtze West Mine, opened by the Japanese and now producing about 200 tons per day

VI.—Output of the Fangtze Group

	Lump		Mixed		Bulk		Total (in tons)	
	1918	1919	1918	1919	1918	1919	1918	1919
Fangtze West ...	3,055	—	32,166	68,891	2,166	138	37,381	68,824
,, East ...		—	—	521	1,773	1,352	1,773	1,873
,, South...		—	—	—	190	1,120	190	1,120
Total ...	3,055	—	32,166	69,112	4,123	2,605	39,394	71,817

The 1920 output for the Fangtze west was about 100,000 tons, Fangtze east, about 30,000 tons. At present the production has fallen off, but this is due to the temporary business depression, and to the further fact, that the budget production and allowance for working was exceeded last year, and until the new budget is passed by the Diet, work will be curtailed.

VII.—Fangtze Electric Light Plant

An exceptionally good German electric light plant is found near the Fangtze station of the Shantung Railway, furnishing light to the town. The dynamo is a Siemens Schuchardt 84 kilowatt direct current, belt driven by a cross compound condensing Corliss engine made by Schuchtermann & Kremer.

Poshan Coal Field—the Mines at Tsuchuan

THE valley of Poshan, in which are situated the district towns of Poshan and Tsuchuan is about 20 miles long, and, from a couple of hundred yards at Poshan, nearly 6 miles broad where it joins the North Shantung plain, near Chouts'un. The whole of this valley is a vast bed of coal, situated at a deeper level in the middle and appearing on the surface at the edges, where it has been forced upwards by the pressure against the limestone of the surrounding hills. At the north-west exit of the valley the coal bed is interrupted by a chain of limestone hills; but it commences again and continues in undiminished quantity in a westerly direction, for another 20 miles, between the main range on the south and the Changpaishan on the north. In this valley and its branches are situated the mining centres of Puchi and Puchuan.

South of the narrow gorge at Poshan another valley opens out, in which is situated the Heishan or Black Hill, in contrast to the Hungshan or Red Hill, so called from its ruddy appearance, which lies to the north-east of Tsuchuan, near the entrance of the valley.

The best quality of anthracite coal is found near the surface in the Heishan Valley, and it is on account of this coal that Poshan has been famous. It is principally used in manufacturing coke, which, owing to its lightness, can be transported further by wheelbarrow than the heavier coal. Poshan coke is used at Ch'ing-chou-fu, Chouts'un, and at Tsinanfu and was even sold at Kiaochou, a distance of 500 *li*. Unfortunately, the Chinese were unable to cope with the waters in the shafts, and most of the mines were obliged to suspend work. The method of removing the water is extremely primitive. A basket woven of willow twigs is passed from one man to another, and is then emptied into a ditch at the mouth of the coal pit. As the galleries are low and narrow—about 3 to 4 feet in diameter,—the miners are obliged to work in a sitting position, and during the time that water is being removed from the mine other work has to cease. The side galleries are short, and are shored up with millet stalks supported by short wooden props. In a country devoid of timber the cost of shoring up extensive galleries, and, in addition, the difficulty of removing the water, is so considerable that the miners are prevented from going far into a seam of coal. The cost of timber may also account for the small diameter of the galleries, which, if enlarged, would need extra support.

The coal, loaded on low, wooden trucks, with iron wheels manufactured at Chinlingchen from T'iehshan iron, is run along the galleries on wooden ways until the bottom of the main shaft is reached, and is then hoisted by wicker basket attached to a pulley on a framework built over the mouth of the pit, pulled by horses.

The Tsuchuan coal mines, worked by foreign machinery supplied by an English firm, were closed in 1891. In 1898, the machinery having been partially repaired at the Tsinan Arsenal, it was put up by a Cantonese at the foot of the Hungshan, at a place called Nanp'u, and used instead of a pumping apparatus. The native coal pits, being situated at a higher level, were thereby drained of the water which had put a stop to their working. Work was resumed with great vigour, and the Cantonese drew a royalty for keeping the mines dry. The Hungshan surface coal is not as good in quality as that from the Heishan mines, and is not

suitable for coke. The best quality lump costs from 5 to 6 large cash a catty at the mouth of the pit; 2nd quality, about 3 cash; and dust, from 1½ to 2 cash. The transport by wheelbarrow has been calculated at about 12 cents a ton per *li*, and this must necessarily limit the consumption of coal to a very small radius, notwithstanding its low initial cost. At Tsinanfu for instance, a ton costs $20.

The Shantung Mining Company, in the supposition that the superior Heishan coal which crops out at the head of the valley is the continuation of the main coal bed, centered their operations to strike it at a lower level, nearer the main railway line which crosses the entrance of the valley at Changtien, thus reducing the distance of the subsidiary line from the mine to the junction with the main line at Changtien.

The German mining parties concentrated their efforts to locate coal at Weihsien, Poshan, Putsan, Putschi, Tawenkou, Ihsien and Kuetschow and for iron ore at Chinlingchen. The combined results of all the geological researches proved much less than they had been led to expect from the exaggerated Chinese reports. Many stories and legends abounded about the presence of gold, silver and lead and large diamond mines near Yichowfu, which on examination proved to be greatly exaggerated.

The Germans therefore decided to develop the coal fields at once. Coal deposits were located in most of the inlets of the mountain chain bordering on Tsinanfu, Yhsien, Itschou, Kuetschou, Tsingtschoufu, later on, however, these were wholly or partly washed away, and through volcanic influençe finally displaced and partly demolished.

It is, however, owing to these same volcanic disturbances that connection was established with the older numerous metallic veins in the mountains, which as already mentioned, are not worth mining, the one exception to these being the large magnetic iron deposit near Chinlingchen of extremely good quality, and in addition a similar deposit, but less valuable on account of the silics contained, in the neighborhood of Yhsien.

On the completion of the general geological researches made, it was decided that following the progress in the building of the railway line, a further special investigation of the remaining mining grounds should be conducted.

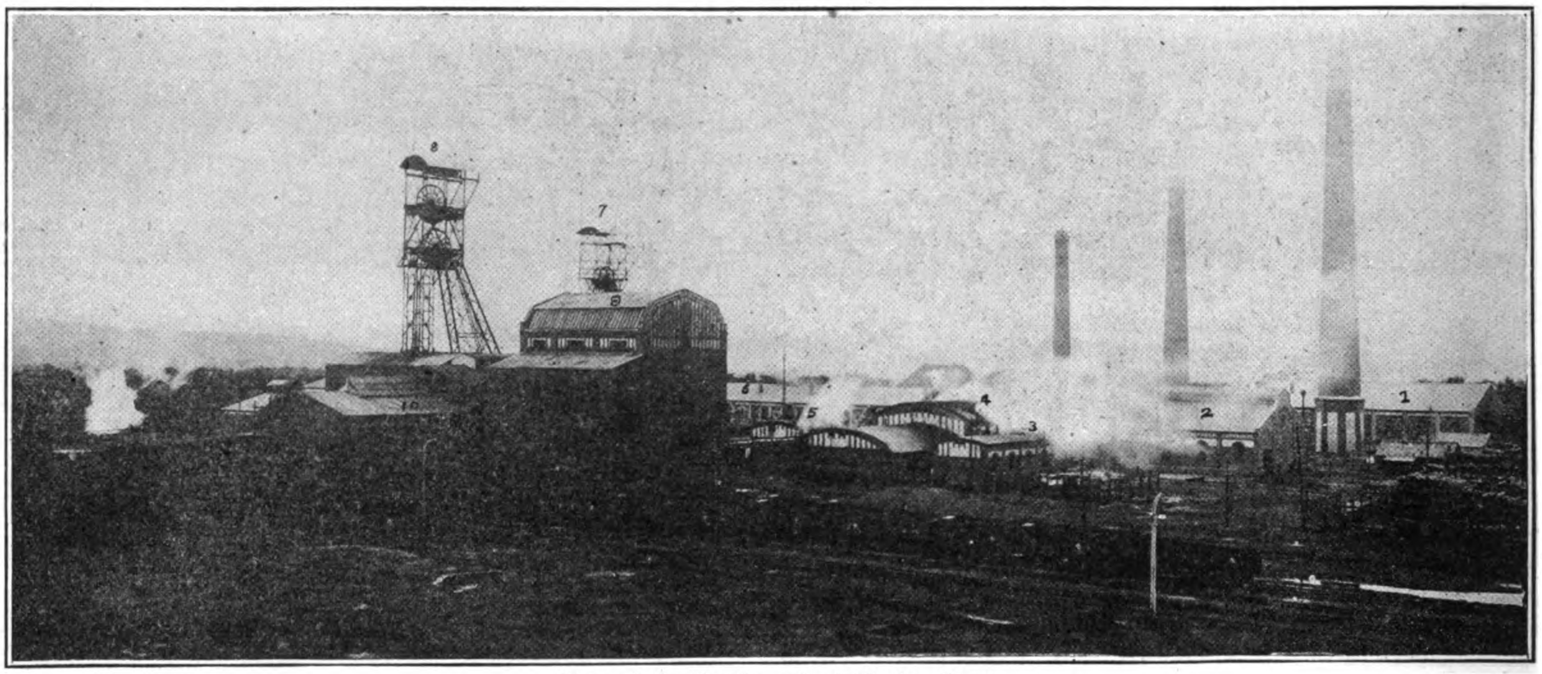
The progress of the railway having made the further special examination of Poshan possible, this was started in the year 1902 and carried on until 1904 when the first shaft was sunk. It was carried down to a depth of 268 metres when it was found there were three strata groups, the first 100 metres underneath the characteristic top layer shows about 16 metres of four single strata of 2½ metres altogether of a really first-class rich coal, having about 17 per cent. gas, and about 8 per cent. ash. The second group, situated about 60 metres from the first, contains three strata in 17 metres, having altogether 1.8 metres coal, likewise of the best quality, but containing on the average 10 per cent. ash and only 15 per cent. gas, which makes the sale of this coal just possible. At a further distance of 100 metres a third group of four strata is found in a extensive mountain layer of about 20 metres, containing 4.2 metres of an anthracite coal having 12 per cent. gas and the same quantity of ash, but of very considerable heating value.

Several of the layers are not worth exploiting. They are, however, cheap to work as they lie between good species of soil, so that the cost in wood is small. In practice the coal is found to be excellent steam coal, and also has the special advantage of being almost smokeless so that it is particularly suitable as a substitute for the expensive Cardiff coal used on warships. Very good hard coke, suitable for oven heating is obtained from the two top strata groups, so that the 40 per cent. of slack from these groups can be turned to most profitable uses. As the coal was found to offer such good advantages, a second shaft was soon made, and was followed by a third shaft with entirely separate mining works, which rendered possible the separation and expedited the mining of the coal apart from the first and second groups. By the end of the year (1913) the total works consisted of the following :—

2 Principal shafts for rich and poor coal, also an emergency shaft built of stone and iron collectively.
1 Coal washer for poor coal
1 Coal washer for rich coal
1 Coal separator with carriage
1 large repair shop
1 Electric shop

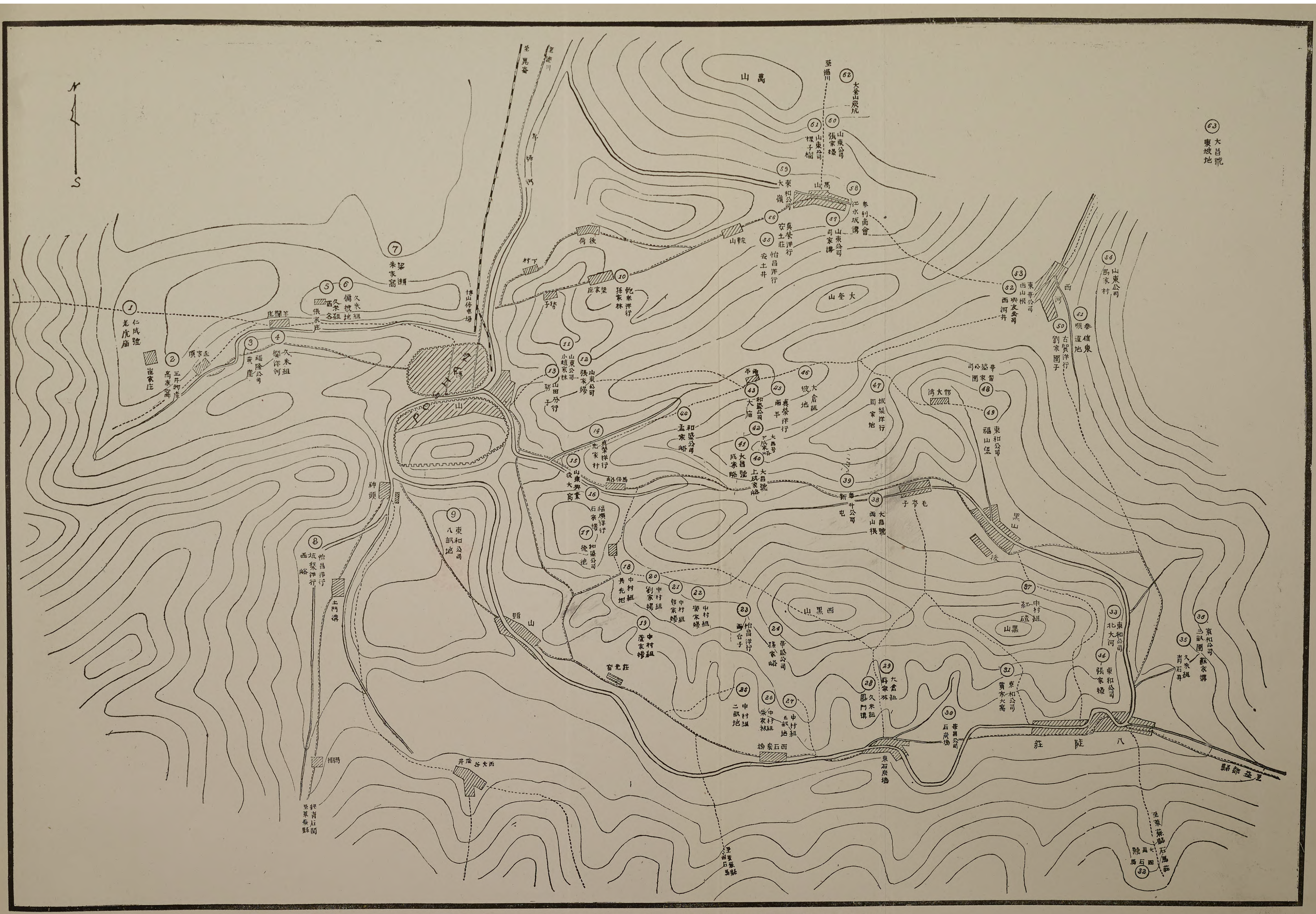
The entire works produce the following results in figures :—

1906/07	14,646.05 tons
1907/08	40,899.05 ,,
1908/09	72,467.73 ,,
1909/10	183,449.84 ,,
1910/11	237,544.35 ,,
1911/12	283,208.50 ,,
1.4.12—31.12.12	299,652.50 ,,
1913	414,000.00 ,,



View of the Tsuchuan Coal Mining Plant

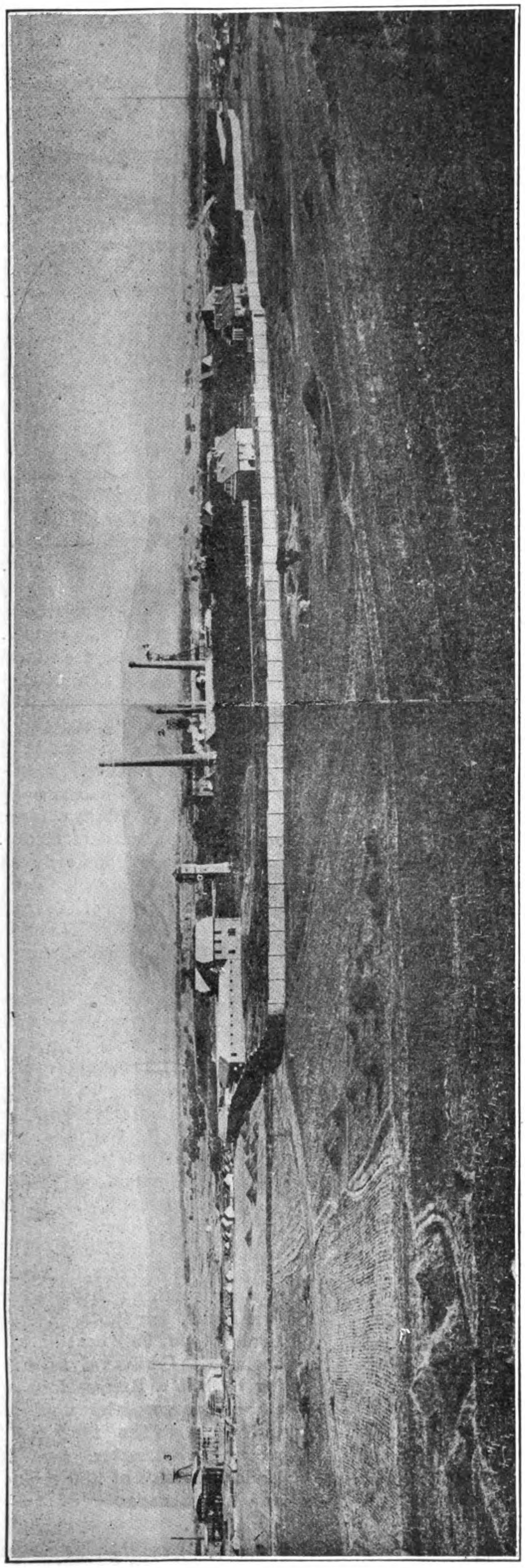
(1) Electric Plant; (2) Boiler House; (3) Ventilating Plant; (4) Air Compressor Plant; (5) Hoisting Engine for the Tsuchuan Shaft; (6) Machine Shops; (7) Tsuchuan Shaft Head Gear; (8) Martha Shaft Head Gear; (9) Coal Washing Plant; (10) Loading Department.



MAP OF THE POSHAN COAL DISTRICT, SHOWING MINES BEING WORKED

The total output of these native and other workings is about 700,000 tons per year, which finds a market within the province. Some of this Poshan coal is now being exported to Denmark. Names of companies operating mines marked on the map: 1, Jinsei Company; 2, Mitsui and Company; 3, Fukuryu Company; 4, 5, 6, Kume Gumi, 7, Yanasi Company; 8, Taisho Company; 9, To-a Company; 10, Kantei Company; 11, 12, San To Company; 13, Yamada Company; 14, Shinyei Company; 15, San To Kogyo; 16, Fukuzun Company; 17, Wasei Company; 18, 19, 20, 21, 22, Nakamura Company; 23, Taisho Company; 24, Kasei Company; 25, 26, 27, Nakamura Company; 28, Kumei Gumi; 29, Okura Gumi; 30, Kasho Company; 31, To-a Company; 32, Taisho Company; 33, 34, To-a Company; 35, Kumei Gumi; 36, To-a Company; 37, Nakamura Company; 38, 39, Taisho Company; 40, 41, 42, Taisho Company; 43, Wasei Company; 44, Wasei Company; 45, Chokuyei Company; 46, Okura Gumi; 47, Sakanashi Company; 48, Kasei Company; 49, To-a Company; 50, Kogu Company; 51, Tai-shing Company; 52, Koyu Company; 53, To-ka Company; 54, Santo Company; 55, Taisho Company; 56, Shinyei Company; 57, Santo Company; 58, Tairi Company; 59, To-a Company; 60, 61, Santo Company; 62, Dai Fusan Company; 63, Daisho Company.

BRITISH MUSEUM



GENERAL VIEW OF THE TSUCHUAN MINES

(1) Martha Shaft; (2) Tsuchuan Shaft; (3) This is the 3rd German Shaft which was sunk in 1913 and complete independent mining works were to be installed. The war started before the machinery was ready to be shipped, but the buildings and steel head gear are all complete. This shaft is not being worked.

The following statistics show the use to which the coal has been put in the last few years :—

	Hungshan	Fangtze
In use at the Pit itself ...	27,200 tons	49,200 tons
Wash and gleanings ...	44,000 ,,	20,400 ,,
Local sale at the shaft ...	38,000 ,,	16,200 ,,
Inland sale by rail	110,300 ,,	52,100 ,,
Use on Railway	19,500 ,,	14,500 ,,
Sale in Tsingtau, local sales	10,000 ,,	41,600 ,,
Bunkered and shipped via Tsingtau	165,500 ,,	5,000 ,,
	414,000 tons	199,000 tons

There is an average of about 30 Europeans employed in Hungshan, and about 5,400 Chinese. As the surrounding villages supply plenty of workmen, there is only a home colony for Europeans.

The above official description of the German mines at Tsuchuan or Hungshan, is reprinted from the Shantung number of The Far Eastern Review, November 1914. Since that date, only three Europeans have received permission to visit the mine, previous to the visit of the publisher of The Far Eastern Review, on January 17, 1921. The following information was obtained upon the ground from official records and plans, and allowing for possible minor errors arising from the difficulty of translating technical terms from the Japanese, is accurate and up-to-date. There was no effort made to conceal any part or working of the mine. Everything, even to the records, were open to my scrutiny.

When the Germans withdrew from the Tsuchuan mines at the outbreak of the war, they damaged the machinery, but not the main shafts. It may be said, that with some minor alterations and additions, the original German equipment is complete and in use at the present time. With the stoppage of the pumps, the mines filled with water, and before the Japanese finished repairing the machinery the galleries were completely flooded. It was not until January 1915 that pumping could be commenced. Over 45,000,000 cubic feet of water was pumped out before working could be again resumed in July 1915. During this period, a small amount of coal, or about 300 tons per day, was mined from some of the upper veins, but it was not until May 1916, that all repairs to the machinery were completed, and the output again reached 1,500 tons.

Nature of Deposit.—The coal may be classified into three groups according to the depth of the veins from which they are mined. Down to the 5th vein at 151 meters below the level, the output may be classified as a free burning smoke coal. These veins, however, are not being worked at present. From the 6th vein at 185 meters below the level, to the 9th at 219 meters, the coal is semi-smokeless, while coal from the 10th and 11th veins at 271 meters is smokeless.

The number of veins, their width and depth below the surface, are as follows :—

Vein No. 1.	Width 15 c.m.	Depth below level	105 meters
,, ,, 2.	,, 40 ,,	,,	125 ,,
,, ,, 3.	,, 20 ,,	,,	131 ,,
,, ,, 4.	,, 25 ,,	,,	139 ,,
,, ,, 5.	,, 40 ,,	,,	151 ,,

Note—All output is now being taken from the following veins:—

Vein No. 6.	Width 60 m.c.	Depth below level	185 meters
,, ,, 7.	,, 30 ,,	,,	199 ,,
,, ,, 8.	,, 30 ,,	,,	204 ,,
,, ,, 9.	,, 10 ,,	,,	219 ,,
,, ,, 10.	,, 2.40 ,,	,,	271 ,,
,, ,, 11.	,, 2.40 ,,	,,	273 ,,
Total depth reached ...	...	...	275 ,,

Size of Deposit.—Total estimated area of coal bearing district, 418 sq. kilometer main deposits extend for about 40 kilometers along the river bed between Poshan and Tsuchuan, with a total estimated area of 186 sq. kilometers. Area proved by Germans, 130 sq. kilometers. Estimated total deposits in area proved by German borings, 800,000,000 tons.

Shafts.—Three shafts have been sunk at Tsuchuan. No. 1, now known as the Tsuchuan shaft was commenced by the Germans

on June 15, 1904 and reached a depth of 268 meters in 1909. This shaft is about 4 meters in diameter. The second shaft retains the name of "Martha" given it by the Germans. It was commenced in 1910 and reached a depth of 275 meters in 1912. This is somewhat larger in diameter than the first shaft, the space for the two cages measuring 2.5 by 3.030 meters. The four deck steel cages are, 91 m. x 3.020 m. the galleries are all laid with light railways, using horses to draw the cars to the shafts.

ELECTRIC PLANT.—The Tsuchuan mine is equipped with an excellent electric light and power plant. The original German plant consists of two alternating sets to which has been added one new Parson's turbo-alternating sets.

The two German sets are made up as follows: *Engine*: Schuchtmann and Kremer; (2) horizontal condensing tandem compound Corliss type. *Cylinders:* H.P. 525 m.m. diameter, L.P. 850 m.m. stroke, 900 m.m. r.p.m. 125; condenser and air pump, jet type double acting, air pump cylinder, 400 m.m. diameter, stroke, 450 m.m. Engine develops 600 horse-power when steam pressure is 8 kgs.

GENERATORS.—(2) A.E.G. direct coupled revolving field 3-phase alternating, 3,000 volts, 100 amperes, capacity 520 K.V.A., speed 125 r.p.m., 50 cycles, 24 pairs of poles. Exciter; direct coupled shunt type 110 v., 114 amperes, 125 r.p.m. 12.5 kw.

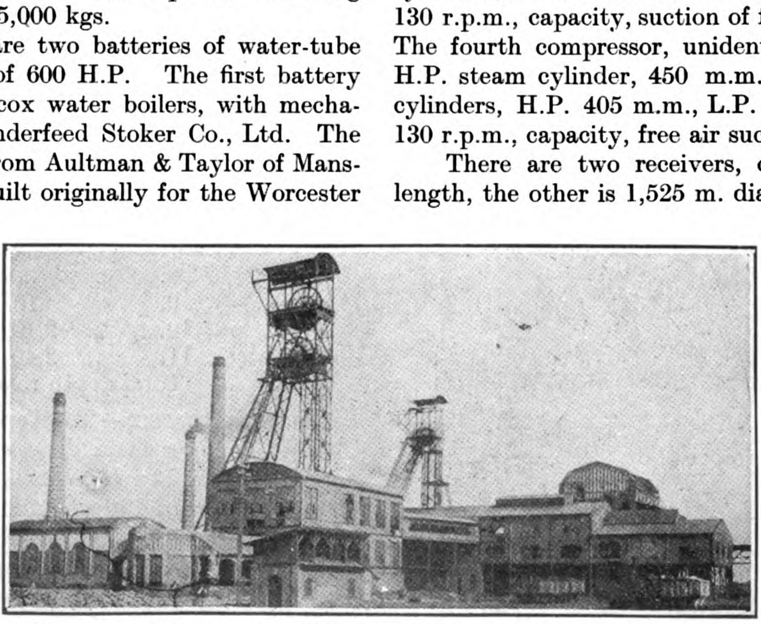
Head Gear of the Martha and Tsuchuan Shafts

1, C. A. Parson's turbo-alternator, 1,000 kilowatts, 3,500 volts, 205 amperes, 3-phase, 50 periods, working at 3,000 r.p.m. This set was made originally by the Mitsubishi Zosen Kaisha, Nagasaki works, for the Hanslim Electric Railway plant at Amagasaki, between Kobe and Osaka, and sold to the Shantung Railway for the mine.

In addition to the three main generating sets, there is a 20 H.P. A.E.G. motor for the boiler plant blower. The switch boards are all of the A.E.G. direct contact panel type; six panels for various purposes. There is an overhead hand power travelling crane, 17 m. span, lifting capacity, 5,000 kgs.

STEAM GENERATORS.—There are two batteries of water-tube boilers, of 150 H.P. each, a total of 600 H.P. The first battery is composed of two Babcock & Wilcox water boilers, with mechanical stokers from the British Underfeed Stoker Co., Ltd. The second battery of two boilers are from Aultman & Taylor of Mansfield, Ohio, and were apparently built originally for the Worcester Mass. Consolidated Street Railway, sold through Thayer & Company of New York. There are two Weir feed pumps.

MAIN BOILER HOUSE.—The boilers for the general steam supply of the mine are installed in two houses. The entire battery consists of 19, three tube Lancashire type boilers, all of German make. Five of the boilers are from the Genekschaft, of Orange, two from Borsig, of Berlin, and twelve from Humboldt at Kalk. The 12 Humbolt boilers are 7-ft. 3-in. x 29-ft. 6⅝-in. with 710 feet of heating surface and 22.76 sq. feet of grate area.



Another view of the Tsuchuan Colliery showing Loading and Shipping side

HOISTING ENGINES.—TSUCHUAN SHAFT.—The main hoisting engine for this shaft is from the German factory, Gutehoffnung-Shutte, Abt., of Sterkrade, made in 1910. Cylinder, 600 m.m., stroke, 1,000 m.m. 125 r.p.m., lifting 2 tons. Winding drum, 3,000 m.m., width 1,000 m.m. The steel hoisting cage for this shaft is a two deck affair carrying four half ton cars. This shaft is also equipped with an underground hoisting engine for the main incline, with a cylinder diameter of 275 m.m. and 520 m.m. Stroke drum diameter, 2,450 m., width 510 m.m.

"MARTHA" SHAFT.—The main hoisting engine for this shaft is also from the Gutehoffnung-Shutte, Abt., Sterkrade. It is a horizontal duplex engine with direct coupling Koepos drum, developing 900 horse-power. Steam cylinder 750 m.m., stroke, 1,600 m. Drum diameter, 6,000 m. Maximum speed for winding, 8 meters per second. This engine hoists a four deck steel cage, carrying two half-ton loaded cars to the deck, by a wire rope 165 m.m. diameter, 415 meters long (140,-000 kilos breaking strength). The head pulley is 5 meters in diameter.

MATERIAL SHAFT.—The third shaft of the Tsuchuan mine is used for materials, and has a horizontal duplex with two stage gearing single winding engine, 220 m.m., cylinder x 300 m.m. stroke.

AIR COMPRESSION PLANT.—This is a very complete and compact installation from the best German makers. There are four compressors, three being of the Koster type from the works of Pokorny & Wittekind Maschinenbau A.G. of Frankfort a/m, and another larger one with no marks of identification, but possibly from Schuchtermann & Kremer.

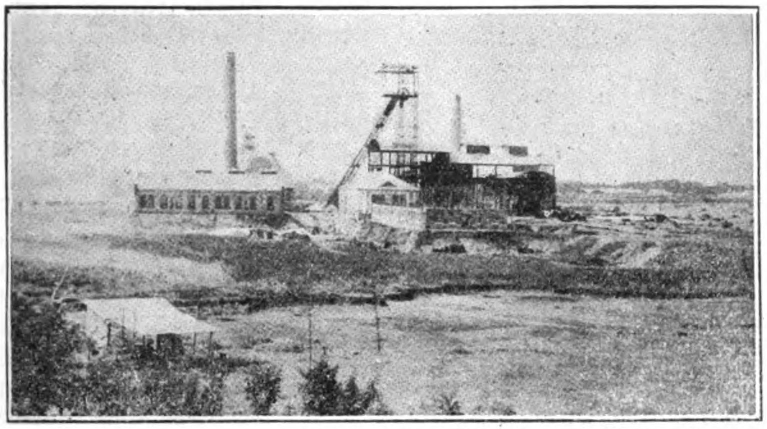
The three from Pokorny & Wittekind, are horizontal cross compound straight line direct acting two stage compressors with steam cylinders, H.P. 385 m.m. diameter, L.P. 570, m.m., air cylinders, H.P. 350 m.m. L.P. 555 m.m., stroke, 700 m.m., speed, 130 r.p.m., capacity, suction of free air, 80 cubic meters per minute. The fourth compressor, unidentified, is of a similar type with a H.P. steam cylinder, 450 m.m. in diameter, L.P., 700 m.m., air cylinders, H.P. 405 m.m., L.P. 640 m.m., stroke, 780 m.m., speed, 130 r.p.m., capacity, free air suction, 100 cu. m. per m.

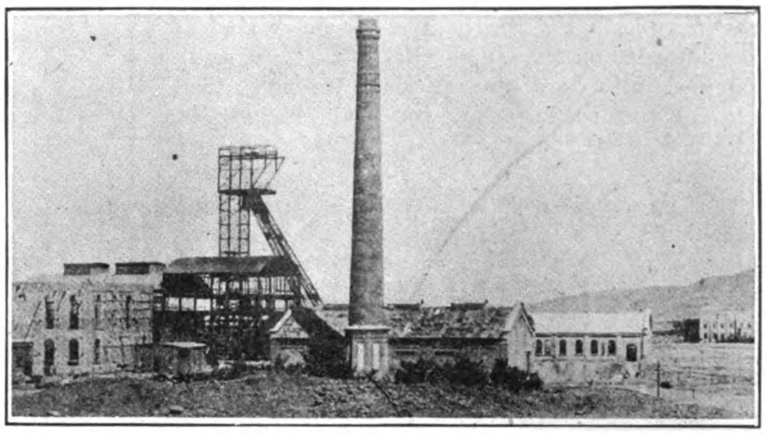
There are two receivers, one 1,625 m. diam x 9,500 m. in length, the other is 1,525 m. diameter x 11,100 m. long.

VENTILATOR PLANT.—This is also a German plant, equipped with a Schuchtmann & Kremer, horizontal duplex single type 90 horse-power engine with Corliss valves, driving by belt a Rateau forward curve vane ventilator made at the works. The fan, 2,400 meters in diameter, has 20 blades, operates at 250 r.p.m., and has a capacity of 3,000 cubic meters per minute.

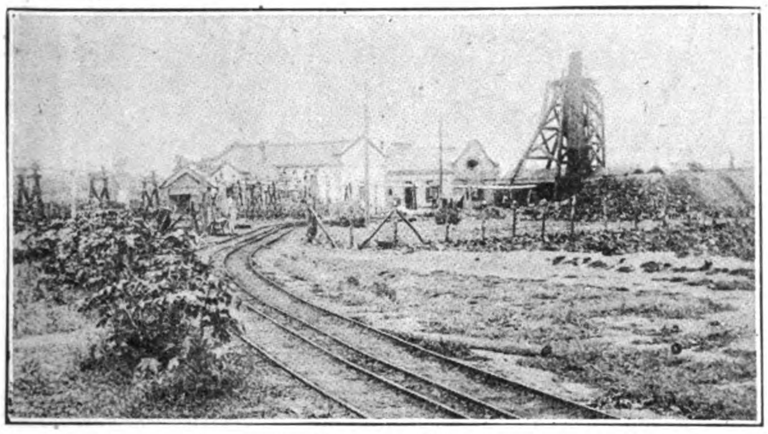
COAL WASHING PLANT.—This is of the Humboldt type

VIEWS OF THE TSUCHUAN COLLIERY

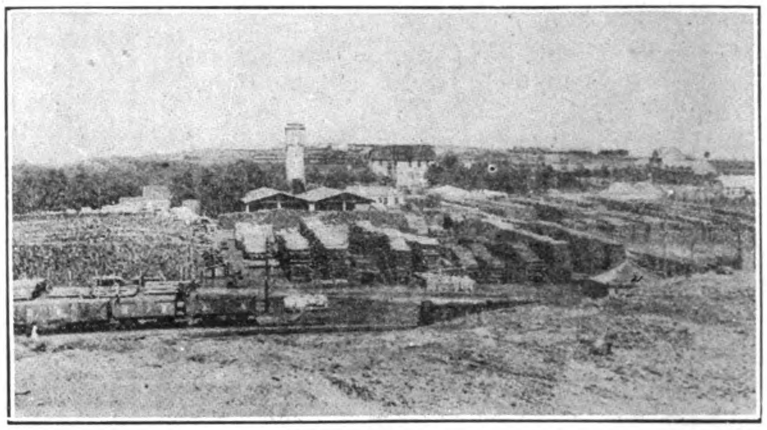




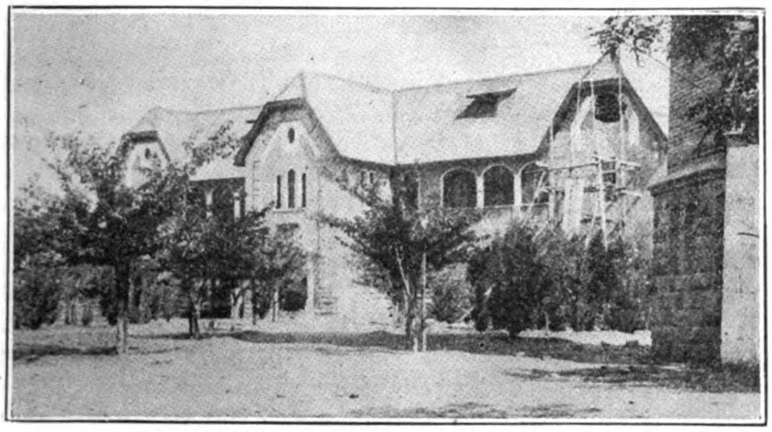
Views of the Third German Shaft with completed Buildings for Independent Mining Works



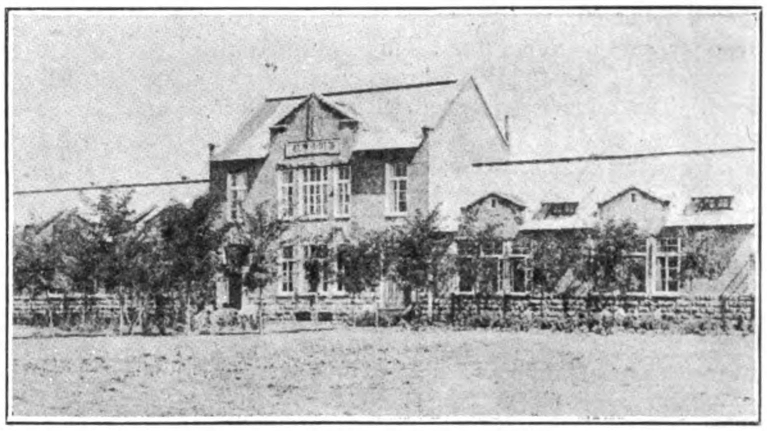
The Branch Mine at Shilichuang, where the German Machinery from the Fangtze Mine has been Installed



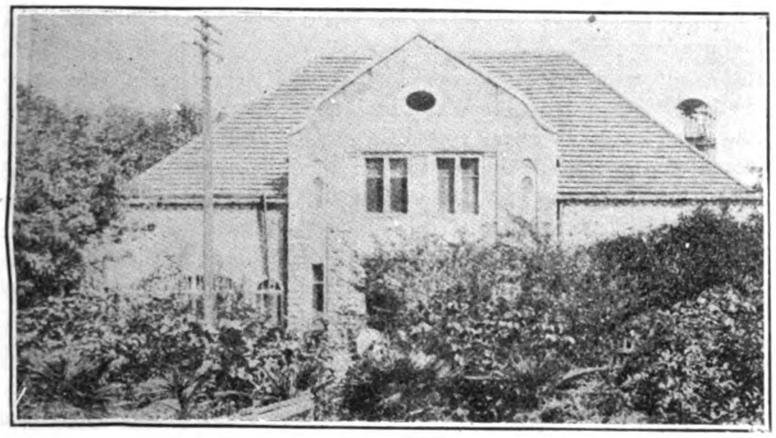
Material Yard of the Tsuchuan Colliery



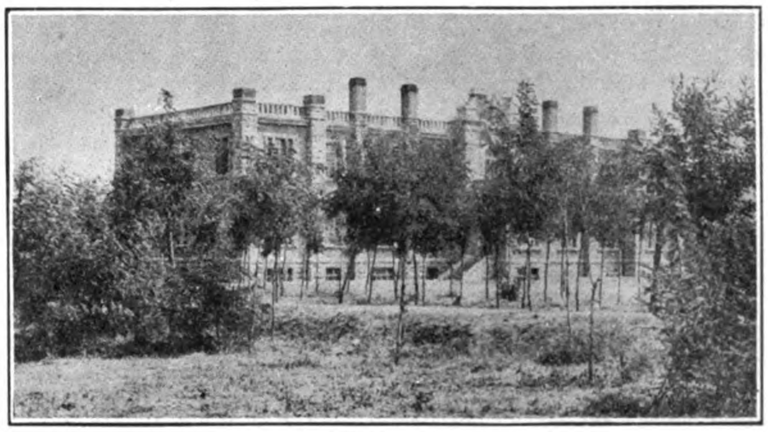
The Tsuchuan Colliery Hospital



The Tsuchuan Colliery School



Tsuchuan Colliery Administration Building



Dormitory Building, Tsuchuan Colliery

with a capacity of 70 tons per hour, but at present is turning out about 300 tons per day.

COAL SEPARATOR AND CONVEYORS.—The cars from both the Martha and Tsuchuan shafts are unloaded on the same boiler plate floor, and dumped into the bins passing through the screens and sorting conveyor and discharged direct from the shutes into the railway cars for shipment.

MACHINE SHOP AND FOUNDRY.—A fair size machine shop and foundry for general repairs is also a part of the equipment. The foundry has a cupula with one ton capacity. The machine shop is well equipped with an assortment of machine tools from all countries. I saw a Brown & Sharp milling machine, Japanese lathes from the Tsukpmoto, Ikegai, Niigata, and Adachi Iron Works, a Japanese-made planer of American model supplied by the Mitsui Bussan Kaisha, three or four of the original German drilling and planing machines from the Saechs Maschinen Fabrik of Chemnitz and several smaller American tools, furnished by the Horne Company of Tokyo.

In addition there is a punching and shearing machine, drop hammer and steam hammer. The shops seem to be kept busy, especially with the all steel coal cars, over 4,000 of which are used underground. The wheels of these cars are all cast in the foundry and finished in the adjoining shop. Boiler, pump and other general repairs apparently keep this little shop taxed to its utmost capacity.

PUMPING EQUIPMENT.—I was unable to visit the underground workings and see the equipment at work. There are two Worthington duplex double acting pumps, with 12-in. steam cylinders, 10-in. stroke, and 7-in. water cylinder, suction pipe, 6-in., delivery 5-in., with a capacity of 245 to 450 gallons per minute at a 300-foot delivery head. The mine is equipped with eight electric and five steam pumps, a total of 13. Some of these are motor-driven turbine sets from the Okumura Electric Works of Japan.

The mine timbers are all imported from Japan.

WORKMEN.—About 4,000 Chinese miners are employed at present working in shifts of eight hours. They are paid 60 copper cash or about 40 cents silver, at normal exchange about 20 cents gold. Over 500 Chinese mechanics of all kinds are employed above ground. There are 250 Japanese employees of all classes, and with their families living at the mine, total 600.

The mine is under the general direction of the Shantung railway administration, and managed by Mr. S. Handa, of the government service. The assistant engineer is Mr. K. Fujita.

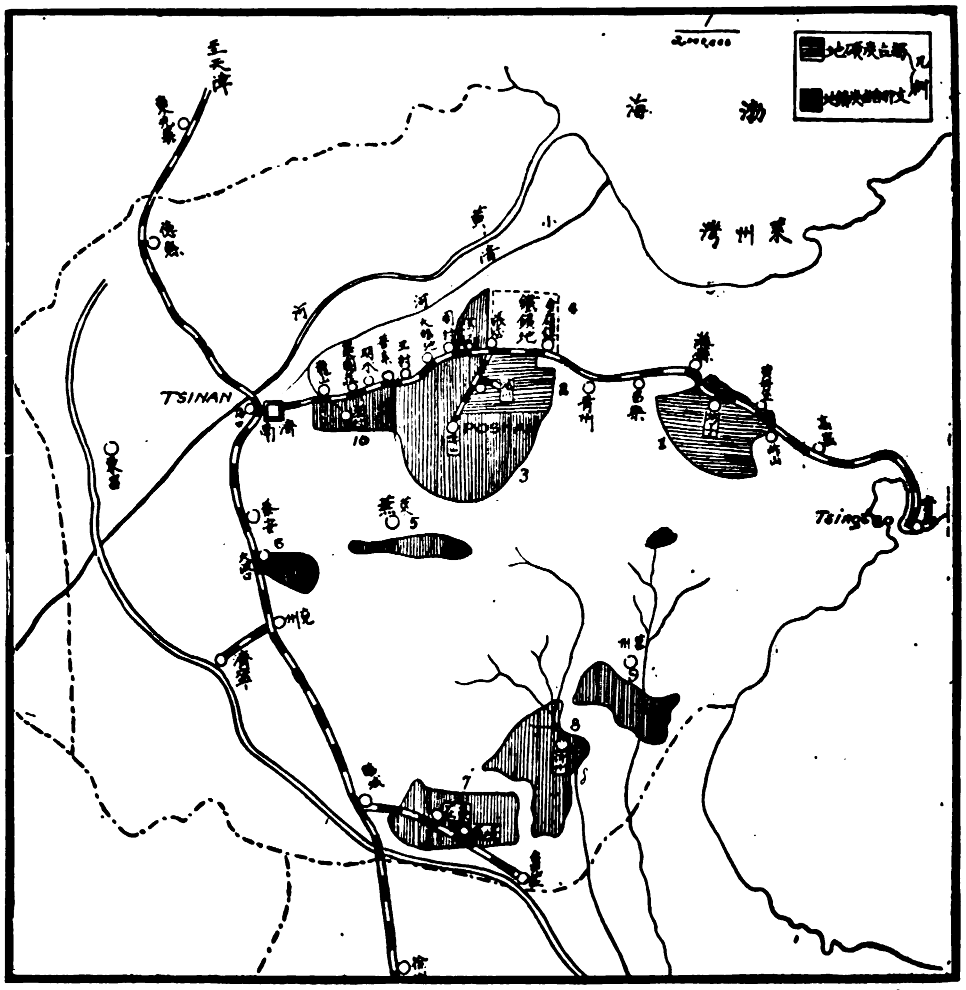
OUTPUT.—The average output is 1,500 tons per day, but this has fallen off at present to about 1,200 tons. The total output during the German management is estimated at 2,000,000 tons. The output under Japanese management is as follows:

Year	Lump	Washed	Mixed	Dust	Other	Total
1916... ...	68,260	83,299	56,457	202,391	47,530	458,437
1917... ...	74,145	81,210	59,035	203,828	39,326	457,544
1918... ...	59,440	70,050	48,076	199,620	28,254	405,440
1919... ...	76,051	66,764	52,513	230,101	21,465	446,894
Nov. 1920	—	—	—	—	—	504,250
Total output under Japanese management ... Tons						2,272,565

Distribution

Year	Sold in Province	Value	Exported	Value	Bunker	Value	Total	Value
1919...	122,474	693,101	67,799	329,545	905	5,418	191,180	1,028,064
1920...	199,359	1,033,647	170,054	901,123	12,433	89,514	377,846	2,024,284

Average price for 1919, Yen 5.38 per ton; 1920, Yen 5.36.



Map of The Shantung Coal Measures showing Areas Worked By Japanese and Chinese

(1) The Fangtze Field; (2) Tsuchuan Field; (3) Poshan Field; (4) Chinlingcheng Iron Deposits; (5) Li-wu Field; (6) Tawenko Field; (7) Yhsien Field (8) Ichow Field; (9) Chinchow Field; (10) Wen Tsu-chen Field. Worked by Japanese; Worked by Chinese

Most the coal exported is of the smokeless variety and sold to the Japanese Navy.

ANALYSIS.—Made at the technical laboratory of the South Manchuria Railway in August 1915.

Vein	Water	Volatile Oil	Solid Carbon	Ash	Color of Ash	Nitrogen	Sulphur	Calories
A... ...	0.81	8.41	72.01	18.77	light pink...	0.861	1.18	7,333
B... ...	0.82	15.99	71.45	11.74	,, ,, ...	1.329	0.90	8,060
C... ...	0.87	12.66	75.57	10.90	,, ,, ...	1.209	1.17	7,657
D... ...	0.82	12.72	80.99	5.47	light yellow	1.178	0.59	8,153
d... ...	0.74	14.66	77.83	6.77	soiled white	1.178	0.83	8,525
E... ...	0.88	13.47	68.16	17.47	,, ,,	0.847	0.89	7,471
F... ...	0.97	13.75	77.97	7.31	white... ...	1.360	1.19	7,510
No Name ...	2.99	5.75	80.98	10.28	light pink...	1.391	2.77	7,006
G.H. 1...	0.84	9.94	84.30	4.92	grey	1.270	1.31	7,440
G.H. 2...	1.23	9.31	83.03	6.43	brown ...	1.178	2.65	7,657
G.H. 3...	1.24	10.45	84.29	4.02	light pink...	1.267	1.57	7,347
I	0.68	10.72	81.49	7.11	soiled white	—	0.56	6,758

TRANSPORT.—Coal from the Tsuchuan mines is carried by the Shantung railway to the port or other distributing points along the line. From the colliery to Tsuchuan station is four miles, from Tsuchuan to Changtien eleven miles and 176 miles to Tsingtau. The present equipment of the railway detailed elsewhere in this number of THE FAR EASTERN REVIEW, embraces 708 coal cars of which about 563 are of 15 tons capacity, the balance of 30 tons each. In addition there are 75 coke cars of 15 tons capacity each for handling the output of the mines. With the increased output of the iron mines added to the collieries, the railway management states that at least 300 thirty-ton cars and 24 more locomotives will be required to deal with the traffic.

FREIGHT CHARGES.—As the railway administration owns and operates the coal mines the output of the Tsuchuan collieries are carried free over the line, while the freight on coal from the Chinese-

owned mines in this district to the port at Tsingtau is silver Yen 61.70 per 15-ton car, less 50 per cent. rebate. This undoubtedly gives the railway a great advantage in being able to set the price for local, export or bunker sales.

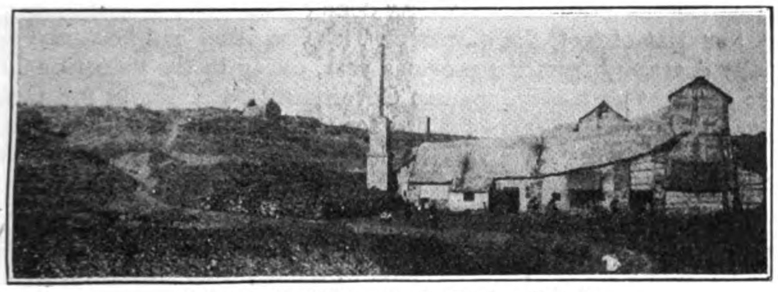
THE THIRD GERMAN SHAFT.—This shaft referred to the original report, with its entirely separate mining works was originally sunk for ventilating purposes. It is located about half-a-mile from the main works and alongside the branch railway that connects the mines with the main branch at Tsuchuan. In 1913, the Germans continued this shaft down to 217 meters and commenced the erection of the new and independent mining works, but before their completion, war broke out. I did not visit this shaft, as I was told that it had no equipment, and had never been used. The headgear, steel buildings, power houses and loading stations, with railroad connections, etc., however, were all completed by the Germans, ready for the machinery when they abandoned Tsuchuan in November, 1914.

TSUCHUAN BRANCH MINES.—In addition to the main mine, the Japanese are developing others located about two to three miles distant. The most important of these is the one at Shilichuang, which has been equipped with machinery taken from the first German Fangtze mine. I was told in Tsingtau that the Fangtze machinery had been dismantled and sent to the Chinglingchen iron mines. This is an error. About 500 tons per day are now being taken from the Shilichuang pit, and the Japanese expect to increase this materially in the future. Another new mine is being developed not far from Shilichuang, at a place called Kunlung. Work on the shafts and upper stratas is being carried on, but as yet, it has not reached the producing stage.

THE LESSER COAL MINES.—The mines in the immediate neighborhood of Poshan have been worked by native methods since the time of the ming dynasty. The opening of the average Chinese pit is about 3×6-ft. and 50-ft. deep, lined with stone or bricks. Hand winches operated by man or animal power are used to haul up the baskets of coal and to drain the mine in the same way. Some of the native mines are equipped with old-fashioned steam engines for hoisting.

There are over 200 of these small pits worked by native methods, producing an aggregate of 700,000 tons annually, or some 2,000 tons per day. Some of these mines are now being operated by Japanese interests. The map of the district shows the location of 65 of these Japanese enterprises. The life of these small mines is two to three years for the small veins and eight to nine for the larger ones. Most of the smaller mines are closed in summer owing the difficulty in keeping them properly drained.

The capital employed for these enterprises runs from fifty to 3,000 Mexican dollars. A tax of .30 Mexican is levied per *mow*,

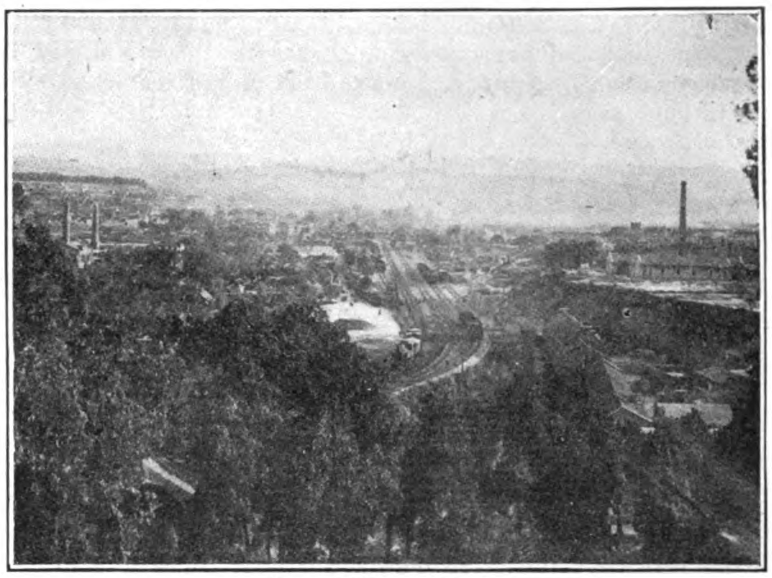


Chinese Coal Mine in the Poshan District

and one and a half per cent. of the output, payable either in money or coal.

Roads in the district are exceedingly bad, and all transportation is by wheelbarrows or donkeys. Of the total output of the Poshan mines, about one-third is transported by the railway.

COKE.—About 150,000 to 200,000 tons of coke are made in Poshan, about half of which finds its outlet over the railway. Some Japanese firms, such as the To-wa Company, Nakamura



General View of Poshan

Company and the I-Sho yoko have gone into the coke business on a considerable scale.

ANALYSIS OF POSHAN COAL.—An analysis of small and large Poshan coal made by the laboratory office at Tsingtau, gives the following:—

	Small Coal	Large Coal	Lump	Unscreened
Water ...	0.58	0.54	0.40	0.49
Volatility ...	9.29	11.25	12.17	16.52
Ash ...	8.39	8.06	4.80	5.50
Sulphur ...	4.97	6.65	—	—
Solid Carbon	81.74	80.69	82.63	77.49
Cokes ...	90.13	88.75	—	—
Calories ...	8,476	8,316	7.874	7.970

The Chinglingchen Iron Mines

The following notes on these mines are reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914:—

In the mountain range which rises in a northerly direction of about 280 and 300 kilometers from the Shantung railway, are to be found large quantities of iron ore in contact with diorite and chalk.

At Tiehshan the iron ore is easily traced by the remains of old mining works; there are still blocks of pure magnet iron ore, which the old miners had not the skill to work; the whole is opened up by shafts, galleries and bore holes. The hanging part is of very hard crystalline chalk, and the lower part of quarz augitdiorite. The iron stone continues regularly throughout except for trifling interruptions, and is only adulterated in the lower part with sulphur pyrites.

An average trial of the ore taken from a mass of 3,000 tons out of Gallery 1 showed conclusively:—

65.42	Fe	Spur	As
0.42	Mn	,,	Sn
0.03	P	2.00	$Si_2 O_3$
0.08	S	0.8	CaO
0.09	Gu	0.5	MgO.

At Sypauschen where the ore is found there are not only clear traces of old mines to be seen, but also remains of an old foundry. This ore in particular contains the highest proportion of iron (66.4%) 2.8 per cent. residue, 0.02% S. and traces of phosphor. The ore is therefore the purest iron ore which can be obtained anywhere.

The ascertained supply of ore amounts all together to 49,100,100 tons, more than 20,000,000 tons of which lies in such a position that it can be worked easily and cheaply. This, of course, does not exhaust the supply by any means. The authenticated amount

of raw iron still remaining amounts to more than 30,000,000 tons.

Now that the preparatory work has been accomplished in opening up sufficient ore, and it has been proved that good coke can be obtained suitable for heating purposes in the neighborhood of the Hungshan mine, it has been decided that iron works shall be erected at Tsangkou, with a preliminary two ovens with a daily output each of 130-150 tons. The preparatory work will be expedited to allow of mining being commenced in 1915.

The Germans could not carry out their intention to erect the iron works at Tsangkao, owing to the war. The Japanese have been working and developing the mines, sending the output to the Government Steel Works, at Yawata in Kyushu. The following information will bring the data on this mine up-to-date.

The Chinlingchen Iron Mines are located on the Lintze district of Shantung at Chang Pu Chuang, about four miles north of Chinlingchen station on the Shantung Railway, 170 miles from Tsingtau. They are connected with the main line by a branch that terminates at Chungpu.

ORE DEPOSITS.—The ore deposits at Chinlingchen extend for 10 miles along the north side of the Shantung Railway and cover an

The following analysis is by the Chinese government bureau of mines at Peking:—

	Total Fe	Fe_2O_3	Fe O	Mn	Cu	Sio_2	P.	S.	Moist
Outcrop	67.08	81.57	11.94	0.08	0.134	1.16	0.024	0.014	2.87
Underground...	61.24	61.18	23.22	0.07	0.054	5.74	0.037	0.105	1.18

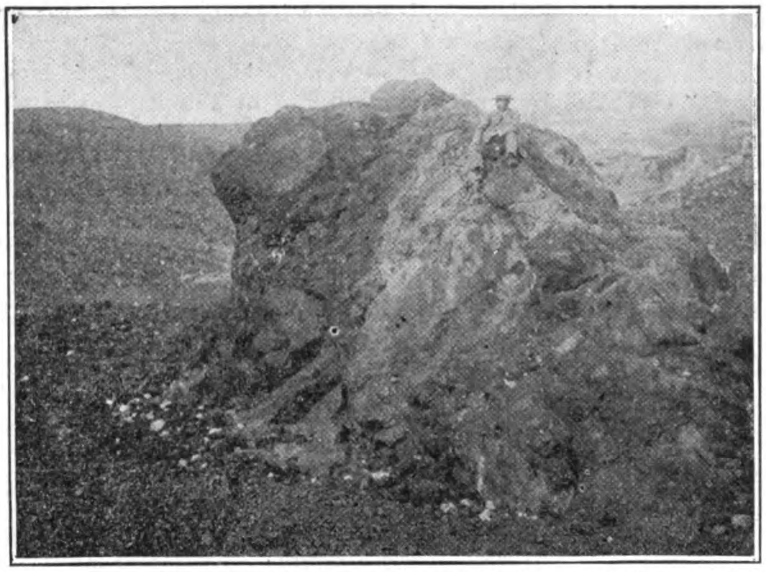
The estimate of the amount of ore in the deposits varies greatly. The original German estimate was in excess of 100,000,000 tons. Chinese engineers estimate it about 50,000,000 tons, while a preliminary Japanese survey was as follows :

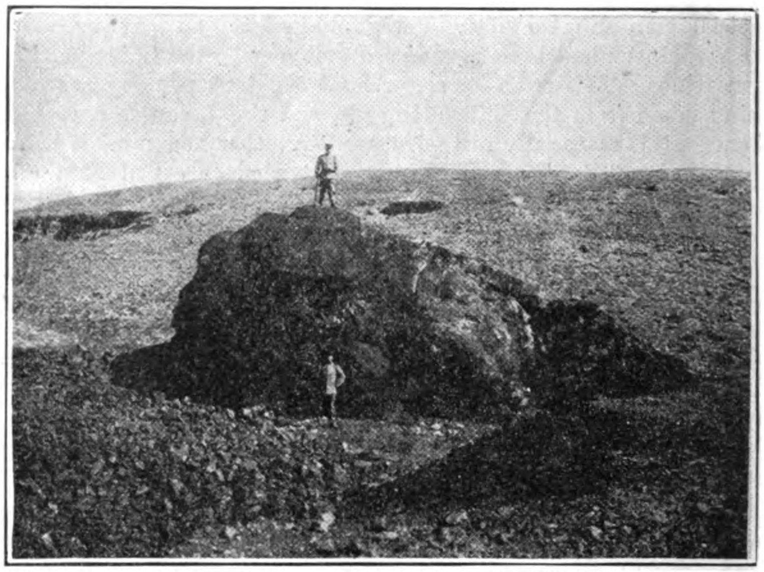
Fenghuangshan.—Length of vein, 2.5 miles, thickness, 30 feet, survey not completed. Location on north side of hill.

Tiehshan.—Length of vein, 1.4 miles, thickness 40 feet. Deposit, 11,000,000 tons above level of plain, 13,000,000 below level. Location, north side of hill

Yuhuangshan.—Length of vein, 3.4 miles, thickness, 80 feet. Deposit, 63,000,000 tons. Location, north side of hill.

Ssupooshan.—Length of vein, 1.5 miles, thickness, 22 feet. Deposit, 17,000,000 tons above level of plain. Location, south end of hill.





Huge Iron Outcroppings on Tiehshan at Chinlingchen Mines. Old Chinese shafts are seen in the picture on the Right

area of about 170 square miles. The deposits consist mainly of Magnetite Fe 30_4 with a small proportion of Hematite Fe$_3$. The following is an analysis made at the Japanese Government Steel Works at Yawata of two recent shipments:—

(1) HEMATITE FE 20_3:

Original weight	1,821.710	tons
Moisture	41.210	,,
Net weight	1,780.500	,,
Iron	63.58	per cent.
Water	2.10	,,
Manganese	0.22	,,
Silicic Acid	4.94	,,
Sulphur	0.10	,,
Phosphorus	0.05	,,
Copper	0.252	,,

(2) MAGNETITE FE 30_4

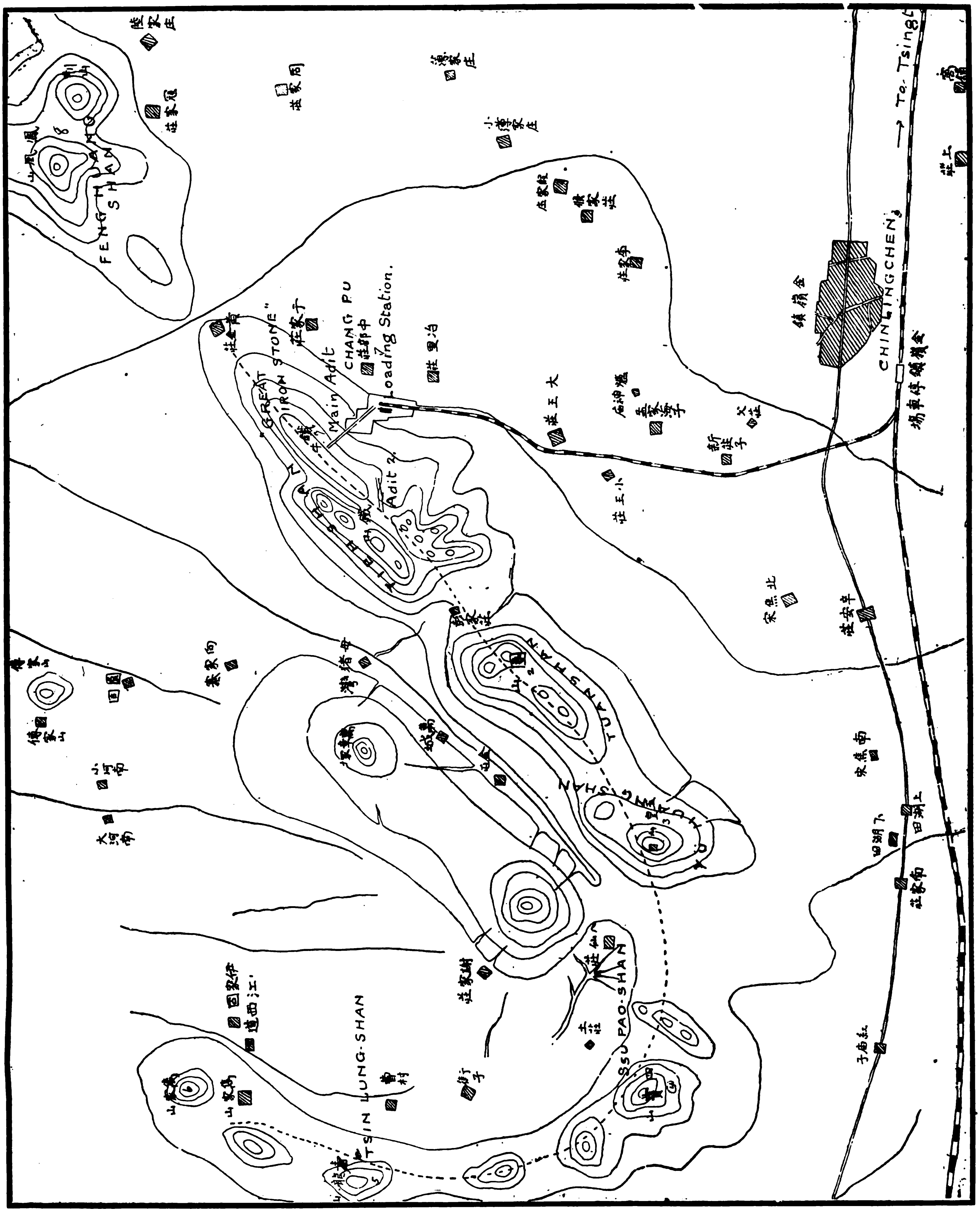
Original weight	4,171.120	tons
Moisture	90.470	,,
Net weight	4,080.65	,,
Iron	56.00	per cent.
Water	1.41	,,
Manganese	0.16	,,
Silicic Acid	9.95	,,
Sulphur	0.858	,,
Phosphorus	0.098	,,
Copper	0.221	,,

The Japanese estimate of the ore is therefore in excess of 100,000,000 tons, bearing out the German estimate.

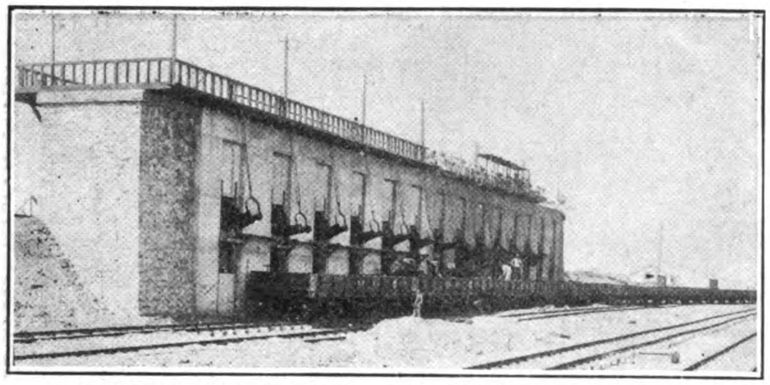
Mr. N. Senju, the Japanese engineer in charge of the mines, informed me that they had not yet completed the surveys and estimates for the entire field, confining their explorations exclusively to the deposits on Tiehshan, where they had 6,000,000 tons blocked out. No work was being done on the other deposits, and as a matter of fact, the output on Tiehshan itself had been materially decreased from the previous year, owing to the reduction in the contract with the Japanese Government Steel Works for this year. Last year's contract called for the delivery of 200,000 tons f.o.b. Tsingtau, but owing to the decreased demand, and falling off in price, the contract for the current year had been cut to 100,000 tons. The production at one period during last year reached 1,000 tons per day, but this had fallen off to the present output of about 200 tons.

The Chinglingchen mines have been surface worked for several centuries by the Chinese, and abandoned as the vein dipped below the surface. Their exploitation was being undertaken seriously by the Germans when the war broke in 1914. They began operations at Tiehshan by starting a 1,200-foot adit towards the main ore body. When compelled to withdraw on the landing of the Japanese army, the Germans had completed about 600 feet.

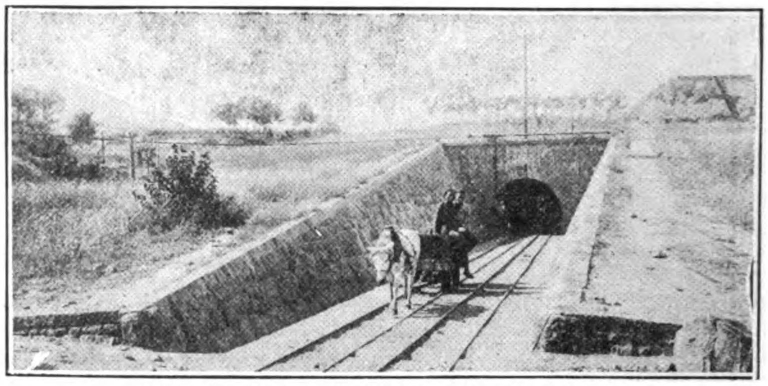
The Japanese began work in October 1916, and by the end of 1917, reached an ore vein from 6 to 12 feet thick. This, however, was considered as an accidental exposure, so a smaller adit was excavated and at 300 feet another 40-foot vein was reached. Several



MAP OF THE CHINLINGCHEN IRON REGION



Ore Bins and Loading Station at the Chinlingchen Iron Mines



The Main Exit to the Chinlingchen Iron Mines

cross cuts have been made from the main adit, and by means of two open cuts from the top, the vein has been exposed in other places.

The Japanese have made no attempt to exploit the mine on a grand scale, as is generally supposed, nor have they equipped it with any new machinery. The story is generally accepted that the machinery from the German Fangtze mine had been dismantled and shipped to Chinglingchen. This is erroneous. Such machinery as was taken from Fangtze was installed at a branch of the Tsuchuan Coal Mine. There is no need as yet of any hoisting machinery at Chinglingchen, as the filled ore cars are operated by gravity from the adits to the storage bins, and the empties are hauled back by mules. The only machinery at the mine is the old boiler plant equipped with Lancashire boilers, and the original German air compressor, a high class machine of the Koster patent made by Neuman & Esser, of Aachen. It is not in use. There are the necessary small blacksmith and repair shops, and residences for Japanese employees. As all the Chinese laborers live in the nearby village, no quarters for them have been provided at the mine. The one important mechanical improvement made by the Japanese is the ore bins and loading station, built near the main adit, from which several fifteen-ton cars can be loaded in five minutes.

When producing its maximum, the staff consists of a Japanese manager, about 30 Japanese engineers and foremen on the surface workings, with 20 Japanese underground and 1,200 Chinese coolies. At present about 500 Chinese laborers are employed. In addition, there are about 40 Japanese soldiers for police duty. The miners work on contract, and are paid at the rate of silver Yen 1.40 to 1.50 per square meter of ore mined, all tools, dynamite, etc., being supplied by the management. Laborers not under contract are paid 40 cents silver a day.

OUTPUT.—The output for the year ending March 1918 is given as follows :

Magnetite ore ...	78,288	tons
Hemitite ore ...	63,965	,,
	142,253	tons

	Free Supply	Exported	Value Yen	Av. Value Per ton
1919	219,677	28,340	204,502	7.22
1920	191,459	144,859	957,406	6.61

Japanese Hospital at Changtien

Uncovering the Iron Deposit from the Top

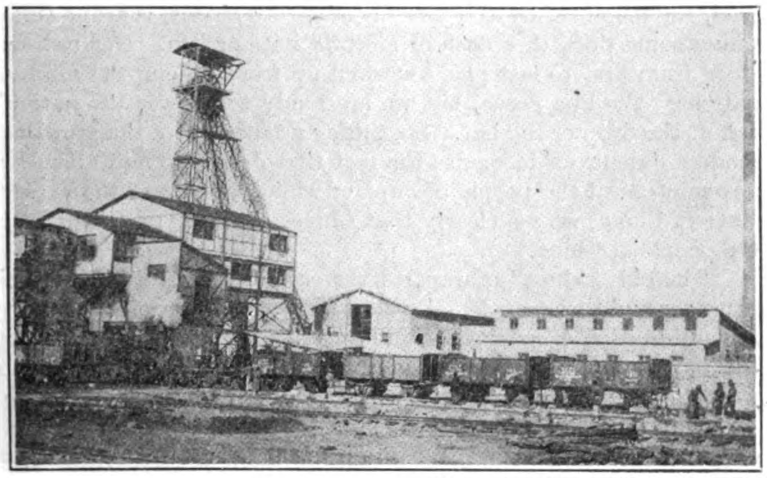
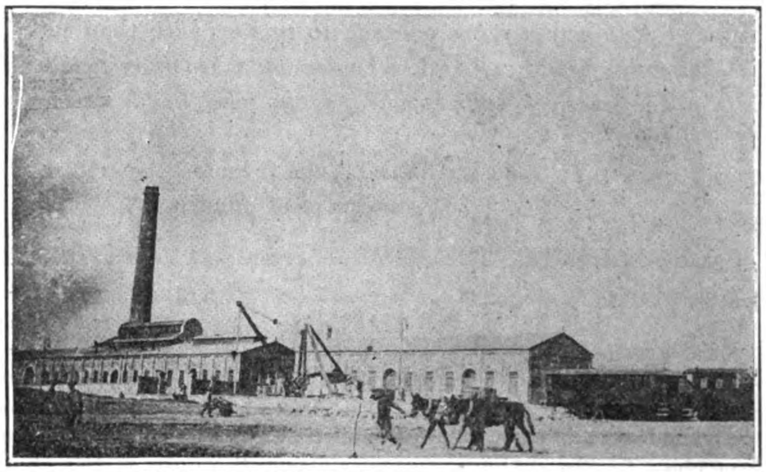
The Chung Hsing Coal Mines

THE Ichow coal field, about 15 kilometers south-west of Ichowfu is the most extensive in Shantung province, covering 6,500 square kilometers. The concession was owned by the Prefect of Ichowfu. During recent years mining has been started in five places, all in primitive Chinese fashion. Some 50 pits are being worked, at a depth of about 35 metres and a width of 1.5 metres. The coal is raised by gins and animals, and is good for cooking purposes. The output is estimated at about 30,000 tons annually.

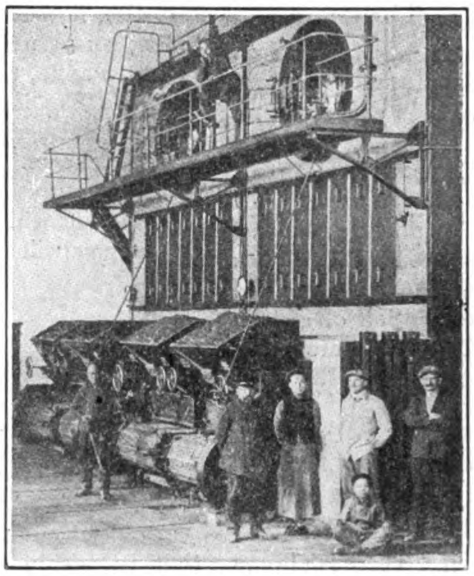
The Yihsien coal-field is considered by far the best in Shantung as regards stratification of the layers, thickness of the seams, and quality of the coal. Besides coal, there is also iron ore of good quality, but not yet worked. The coal-field is in a mould 30 kilometres long and 8 kilometres deep, the upper seam has a thickness of from 2.5 to 10 metres, and the lower, from 0.8 to 1.12 metres. Beyond the mould the field is reported to extend some 10 kilometres in a westerly direction, to near the Tientsin-Pukow Railway, which has built a branch line to Tsaochwang, and has contracted for 60,000 tons of coal annually. Some 60,000 tons are being coked annually. The Yihsien coal-field belongs to the Chung Hsing Mining Company, which was started in the year 1880. In 1898 the company was transformed into a German-Chinese company, and was granted a concession for mining with machinery, a field 100 *li* in circumference, and for a railway from the mine to the Grand Canal. In 1908 the two German shareholders were bought out, and the company, which until then had worked with a capital of Taels 800,000, became again a purely Chinese limited liability company, with a capital of Taels 2,200,000, of which the provincial government holds Taels 100,000.

The capital of the concern was again increased to Taels 3,500,000. The company operates eight shafts and has just equipped its newest shaft with modern machinery. When this shaft is in full working order 2,000 tons of coal a day can be taken from it, but at present it yields but 500 tons a day.

The machinery for this mine was supplied entirely by German manufacturers, who advanced a loan of 80,000 marks (about $19,000) to the company in connection with the installation of the machinery. The plant includes 10 boilers, pumps, elevators, electric machinery, and cars. The company operates 27 miles of railway in connection with the mine, and for the construction and equipment of this railway German capital and materials were used.

General Views of the Principal Plant, Chung Hsing Coal Mines



Boiler Room of Chung Hsing Coal Mines

Previous to the construction of the Tientsin-Pukow Railway, the company's products were shipped viâ the Grand Canal, but now practically all of its coal is shipped over this railroad. The company states that shipping over the canal costs 3 cents Mexican a ton-mile, while shipping over the railroad costs but 2 cents. The coal, which sells at the mine for $2.25 gold a ton, is bituminous and is said to rank with Kaiping coal. The company claims a total of 4,000 tons a day capacity, and besides makes large quantities of coke.

The chief engineer and the first assistant of this company are Cantonese trained at Tongshan in Chihli. They have had no foreign assistance in the construction and operation of the company's plant. The chief engineer receives $120 gold a month and his assistant one-half this sum. All of the labor in the mine is on a contract basis, the native miner making an average daily wage of about 10 cents gold. There are about 800 men employed on the company's premises. The Tientsin-Pukow Railway has constructed a branch line from Lincheng to Yihsien, where it connects with the railway owned by the mining company, thus providing a through rail outlet to the market for their coal.

General View of Yihsien Coal Fields

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, FEBRUARY, 1921.

Lest we Forget!

"It wants more courage to make peace than to carry on a war. *People who demand war and criticize peace are generally weak people who have never fought.*"

ELIHU ROOT, the foremost American statesman of our time.

Shantung

SINCE the Judgment of Paris, 1919, Shantung has been on many lips and in many minds. The name of this Chinese province has been advertised almost as successfully as a celebrated soap. Kiaochau, too, has become very nearly as well known as the chow-chow pickled and put up by the author of the 57 varieties. Almost two years have elapsed since Shantung became a *cause celebre* rivalling the Dreyfus or the Maybrick case, not to speak of the Jameson raid. Nevertheless, no newspaper on earth has seen fit to search out for itself the facts to be found in Shantung. Fuss and feathers have monopolized attention, facts have been deemed of no importance.

The survey of Shantung, to-day, given in this issue of The Far Eastern Review speaks for itself. Mr. Rea has made his own independent investigation. He has not sought to make out a case for or against Japan, China or the Akound of Swat. He has sought, found and presented facts. Experience inclines us to the opinion that this impartial and thorough presentation of serious and very interesting facts will be appreciated by all who are really trying to do business in the Far East.

* * *

Be Just and Fear Not

THERE is, as we know, a cause for everything. There is always a cause for anger. When Cain slew his brother, Abel, he thought he had good cause for anger; undoubtedly, he believed that Abel had come between him and God. He was wrong, of course, and God's punishment of Cain has been held up before the youth of the world as a solemn warning against the cardinal vice of anger.

There is a cause for the present deplorable tension that undoubtedly exists between America and Japan. The tempter has been busy in both countries, stirring up anger, seeking to slay a friendship that existed from the moment in which Japan came out into the world as a member of the modern family of nations. Enemies of Japan and America are gleefully hoping that anger will push reason out of the way and bring about a rupture that cannot be desired by any patriotic, intelligent Japanese or American.

Now, seldom in a quarrel is right absolutely upon one side of the issue. Japanese would not be easily stirred to anger if Americans were more disposed to listen to reasonable presentations of Japanese grievances. Americans have their faults, as all human beings have faults, but there is no more fair-minded people than those of the American Commonwealth. "Be just and fear not" is the guiding principle that dominates the vast majority of Americans.

Japan has not been given a square deal by the Far Eastern press or by most of the American newspapers, chiefly because the anti-Japanese propagandist has debauched the news of Eastern Asia. The story is one of the most unpleasant that has ever offered itself to a reporter. It will be told. Meanwhile, however, the American friends of Japan would be lacking in true friendship were they to close their eyes to certain Japanese facts that stand between the Japanese empire and national security.

We do not agree with those who glibly denounce "Japanese militarism" and who seek to delude the world into visioning Japan as "The Prussia of the Far East." Militant nationalism, as personified, for instance, by the late Theodore Roosevelt, is a fine thing. China could do with a dash of militant nationalism. Our national story from first to last places us well up front among the militant nations. We like peace, but we are ready to answer the nation's call at the drop of the hat. So, taking a fair view of the growth of modern Japan, we recognize the fact that Japanese militarism has never menaced the people of Japan; while, looking at the present state of China, we see clearly that Chinese militarism does menace the people of China.

The old "sabres" of Japan have earned the gratitude of their Emperor and their people. Do they seek to cap their good work by a manifestation of patriotic sound sense? We are willing to credit the military men of Nippon with good judgment as well as unwavering patriotism. Therefore, in the spirit of frank friendship, we say to the military men of Japan: "Put a curb upon the temper of your soldiers. The world is in no mood to sustain a power that builds upon the sword, alone. Swagger is not essential to good soldiering. Don't make a parade of swords and bayonets. Remember, also, how it was a shot carlessly fired by a Filipino insurgent killing an American non-commissioned officer at San Juan del Monte, Manila, that kept America in the Philippines. A few more incidents like the Langdon case might prove expensive to both Japan and America. Japan's weakness is the cockiness of too many of her soldiers. When friendly Americans dislike and condemn certain features of the Japanese military system, the Japanese general staff will do well to uproot those evil features. The most cordial goodwill suggests this friendly advice."

* * *

The Right Kind of Chinese-Japanese Friendship

SIGNS are not wanting of a serious resumption of the right kind of Chinese-Japanese friendship. In business as well as in official circles, Chinese and Japanese are learning the lesson that friendship pays and enmity is calculated to be expensive. Militarism might prove the ruin of both Japan and China. The interests of Chinese-Japanese business are opposed to the ambitions of Chinese and Japanese militarists.

On the night of January 26, the Japanese Chamber of Commerce of Shanghai entertained the leaders of the Chinese Chamber of Commerce and several important things were said and done. Mr. Y. T. Nieh, the chairman of the Chinese Chamber, made a very excellent speech.

"There is much talk to-day," said Mr. Nieh, "of promoting cordial and real friendship between China and Japan. As a matter of fact, China and Japan have been intimate friends as far back as the Tang dynasty. We offered a cordial welcome to our Japanese neighbors even during the operation of the Closed Door policy against Europeans. As nations and individually, Chinese and Japanese are old friends and neighbors, while Europeans are new acquaintances and our guests. It is natural that the tie between

old friends and neighbors should be stronger and the intimacy closer than with new acquaintances and guests coming from distant parts. Thus, it is not surprising that the ever intimate friendship between China and Japan has not been seriously affected by the Chinese-Japanese war. This was proved by the fact that the people of China whole-heartedly supported their Japanese neighbors during the Russo-Japanese war. While nominally neutral as a nation, the people showed their natural feelings by cheering each Japanese victory. Our people have never sought the injury of Japan.

"Yet, to our regret, we have seen the serious decline of this ancient friendship between two neighboring peoples. Observing Japan's growing national prestige, an anti-Japanese feeling has grown apace in China, because of disappointment. In his recent speech to the Japanese Diet, the premier of Japan stated that the Japanese government appreciates the importance of strengthening Chinese-Japanese friendship, that his government is bending efforts to that end and that anti-Japanese feeling in China has not resulted solely from Japan's policy in China. We will not dwell upon the cause of this anti-Japanese feeling, whether it has resulted from Japan's policy or acts, or from other causes. So long as the Japanese government appreciates the vital importance of preserving Chinese friendship differences and difficulties can be removed, and the ancient accord restored. We Chinese will readily welcome real Japanese friendship; but permit me to say that friendship rests in deeds and not in mere words, in sincerity and not in formality. I sincerely hope that for the future intimate friendship between Japan and China will be manifested by the people of the two countries in practical application and will not be confined to polite exchanges between publicists and diplomats. As we are tradesmen, I will say within the scope of a tradesman that business cannot last a day or even a minute without honesty and sincerity. I shall lay upon myself the burden of bearing my own part of this word, sincerity; and I hope you gentlemen of our sister country will do the same."

That is one of the best speeches delivered for many a long day in China. Is it not a model of politeness and plain truth? The Japanese merchants and officials in China will do well to take it to heart and to whisper it—not too softly—to a general or colonel or two across the Sea of Japan. Japan can have the friendship of China, but only by paying for it in the only coin that purchases friendship—the golden currency of honest, friendly acts.

* * *

Korea's Economic Prospects

SELDOM, is it, that anything wholesome or truthful about Korean conditions appears in the Shanghai press, where rampant antagonism to anything and everything Japanese points each moral and adorns every tale. It is, therefore, with pleasure that we reproduce the following timely editorial under the above caption printed in the go-ahead Shanghai *Times* on January 28:—

In one way or another of late we have been hearing so much regarding discontent surging in Korea that it is a positive relief to read of something much more pleasing and, incidentally, much more accurate regarding that country, which the impartial testimony of those competent to judge proves convincingly is infinitely better to-day under the guidance of the Japanese than has ever been the case in the history of Korea. An article in a recent issue of "The Far East Commercial Supplement" makes this abundantly clear. In this article, from the pen of Mr. S. Minobe, governor of the Bank of Chosen, we have facts and figures presented in a careful manner which plainly show that the economic development of Korea during the past decade, namely, since the annexation of the country by the Japanese, has been truly wonderful, creditable alike to the Japanese and all to the good of the Koreans themselves. We find that during the period mentioned the commercial prosperity of the country as revealed in its imports and exports has increased no less than sevenfold. In 1910 the value of Korea's exports was Y.29,113,581, imports Y.41,658,876, a total of Y.70,772,357, while in 1919 the total value had expanded to no less a sum than Y.506,507,832. These figures are eloquent of what the country is capable of doing when guided in the proper direction, and they augur well for Korea's future prosperity. They are also infinitely more convincing regarding Japan's treatment of the Koreans than the many loose and obviously prejudiced statements that one hears and reads so often regarding the country. Korea has a great future. Even to-day she is still very largely an agricultural country, as her manufactures are still in the incipient stage. Korea, as is pointed out in the article above referred to, is ideally situated as a commercial country, and in consequence its trade can be extended in many directions, with Japan to the east, Manchuria and Siberia to the north and China to the west. To this geographical advantage can now be added its excellent communication services and banking facilities. Best of all is the undoubted fact that, despite the croaking of the malcontents and the loose statements of the prejudiced, the commercial ties are growing more intimate year by year between the Japanese and the Koreans and are proving one of the best agencies to bring about the much-desired sympathy and goodwill between the two countries now so closely united. As Mr. Minobe says "Common business interests will do what other interests may fail to do," and he very truly adds that "the economic development of the country is most desirable for this as for any other reason."

Even in agriculture, in which the Koreans have been engaged from time immemorial, there is, despite the excellent work of irrigation and reclamation that has been done during the past ten years, plenty of room for further development. There is also a specially bright future for the silk industry. Indeed progress in this direction has been so rapid that Korea, along with Japan proper, may yet rank among the chief silk-producing countries of the world. In the mining of iron and coal very considerable progress is to be noted. Probably the chief factor that has contributed to the very satisfactory development to which we have referred is the laying of the railways, which has been most effective and far-reaching in its results, and what has been done in this direction will, we have no doubt, be surpassed in the near future.

Altogether the economic development of Korea is progressing most satisfactorily and that the country is in good hands and is moving in the right direction is evident from the facts and figures above mentioned. They are much more convincing than all the claptrap of the discontented and the indiscrimination shown by the prejudiced.

The newspaper that publishes the pleasant truth is believed and respected when it resorts to friendly criticism. In this imperfect world, no nation or person is perfect. We have all much to learn, to do and to undo. Japan carries a heavy cross in Korea. Only a policy of prudence and patience and kindliness towards the Koreans will ever wipe out the black smudge of the "abdication" era. To fair-minded, practical people who know the sins as well as the sorrows of the Koreans, Japan's original errors seem to offer no good reason why we should unite in making her burden heavier, her task more difficult and the future of Korea more indefinite or more dangerous.

* * *

The Chinese Rolling-Stock Loan

THE Chinese ministry of communications has arranged with a group of 27 Chinese banks for a loan of $6,000,000 at 8 per cent. for the purchase of rolling-stock for the Chinese government railways. The terms are as follows:—

I. The ministry of communications will issue a loan for the purchase of railway cars and locomotives, known as "The 8% Short-term Railway Car Loan of the Ministry of Communications." II. The total amount of the loan shall be $6,000,000, Peking currency. III. The bonds of the loan are to be in three denominations, namely, $10,000, $1,000 and $100. The bonds shall not be registered. IV. The bonds shall bear interest at the rate of eight per cent. per annum, payable on the 30th June and 31st December of each year. V. In addition to the yearly interest, these bonds will be entitled to a bonus of two per cent. of the unpaid profits of the Peking-Hankow Railway as shown in the annual general statement of accounts of the said line. The bonus shall be issued on the 31st December of each year when the interest payment is made. VI. The principal and interest of the bonds shall be secured by the cars and locomotives purchased and also by such an amount of profits of the Peking-Hankow Railway as equal to the amount of the loan, which has not been pledged for any other purpose. VII. The bonds shall be sold for $95 per $100 face value. VIII. The term of repayment of the loan is three years. In the first year only interest is to be paid and commencing from the second year the principal of the loan will be paid by half-yearly instalments. The repayment of principal will be made by means of drawings, which will be held in Peking, when one-quarter of the whole amount of the loan will be repaid, that is $1,500,000. The whole of the principal of the loan will be repaid on the 31st Decem-

ber of the 12th year of the Republic. IX. The payment of principal and interest will be made by such bank or banks as designated by the ministry of communications. X. Interest for the bonds shall be payable on the day following the payment of the bonds. XI. All the railways to which the purchased cars and locomotives, have been assigned, shall pay to the banks, which have underwritten the loan, certain sums towards the reserve fund for the payment of principal and interest of the bonds. XII. These bonds may be used as reserves of any bank or security of any member of the staffs on the different railways or as security to be deposited by the express companies or contractors. These bonds may also be sold or mortgaged or used as security for any other purposes. The coupons of these bonds shall be accepted at the date of interest payment as cash at any of the railways. XIII. The custodians of the bonds shall be punished in case of any fraudulent actions in connection with the bonds in the same manner as any abuser of the public bonds. XIV. At each drawing when the principal of the loan is paid, supervision will be exercised by the government auditors in company with the officials of the ministry of communications. XV. The regulations shall be valid on the day of promulgation.

* * *

The China Consortium

IN his speech at the China Association dinner, Sir Charles Addis had several important things to say with regard to the new Consortium and how it differs from the old. Under the agreement recently signed in New York, the four groups completely surrender their separate and individual interests, and the old *régime* of spheres of interest is abandoned. All these interests will in future be pooled. Thus one important source of friction will be removed, for each group will share in the general pool in agreed and defined proportions. With regard to the Shantung railway, which is dealt with in the Treaty of Versailles, Sir Charles explained that this question does not lie within the province of the Consortium, and it is obvious that it can only be reopened by the parties to that Treaty or the League of Nations. Unification of the railways of China, impossible under the old system, is one of the main objects of the new Consortium. It is proposed to set up a railway board to administer the system as a whole. The new Consortium, therefore, marks the beginning of a new era in the development of China which should bring marked benefits to her and ensure a minimum of friction amongst the Powers involved. It will be noted that Sir Charles made it clear that the governments of the four different countries concerned, Great Britain, France, Japan, and the United States, were actually responsible for the idea of substituting cooperation for conflict.—The *Times.*

* * *

"The Far Eastern Review" and the Shantung Question

By George Bronson Rea

IN previous articles THE FAR EASTERN REVIEW has attempted to throw light on many of the questions that stand in the way of harmonious co-operation between the nations for the uplifting of China. In this number is found facts that dissipate many of the misconceptions concerning Japan's activities in Shantung. As far as I have been able to learn, no attempt has hitherto been made to ascertain upon the ground the truth about Japan's development of Tsingtau. Most of the sensational articles and reports concerning Japan's alleged unfair practices in Tsingtau have originated either in Peking or in Shanghai and from these points have been disseminated throughout the world in pursuit of a set policy to discredit and injure Japan.

The favorite charge against Japan is that she is planning to dominate Shantung, and, by discrimination and other questionable practices, to exclude other nations from equal opportunity in developing its trade and resources. In support of this statement, it is further alleged that the files of the United States state department are overflowing with reports containing concrete and specific evidence which convict Japan of double-dealing in securing for her nationals the monopoly of trade in Shantung. These statements may be true, but if they are, I am satisfied, after careful inquiry on the ground, that they did not emanate from American firms or interests in Tsingtau. If such reports have been submitted to the state department, other reports exist which nullify their value.

The highest American authority in Tsingtau is on record that the great growth of Japanese business interests in the port is due to the intelligent and far-seeing direction of Dr. M. Akiyama, chief civil administrator, and that if Americans and Europeans have not availed themselves of the many business opportunities, it is because they were preoccupied with other more pressing and important matters arising out of the war. *It has not been due to any unwillingness on the part of the Japanese authorities to extend privileges to other than their own nationals.*

The Japanese civil administration has placed itself on record that all inducements offered to industrial enterprises within its jurisdiction are open to all parties, irrespective of nationality. Furthermore, the Japanese authorities have expressed not only their willingness, but also their hope that American citizens will unite with Japanese subjects in developing the commercial and industrial possibilities of the port.

Many of the misconceptions surrounding Japan's position in Shantung arise from the note addressed to the Chinese foreign minister on May 25, 1915, by the minister of Japan, which dealt with Japan's conditions for the restoration of the leased territory to China. These conditions provided for the opening of the whole of Kiaochau as a commercial port; *establishment of a Japanese settlement in a locality to be designated by the Japanese government, and the establishment, if desired by the Powers, of an international settlement.* For at least four years, these conditions were commonly accepted as the basis upon which Japan would restore the territory to China; and, as foreigners watched the rapid development of the city, with its houses and factories all owned by Japanese, the conviction became settled in their minds that if an international settlement were eventually created, the business heart would remain under the control of Japan. It will take some time to dispel this idea.

Without following all the details of the various documents that mark the changes in Japanese policy regarding the transfer of Kiaochau, it may be said that the Japanese government has swung around in favor of an international settlement *without an exclusive Japanese concession.* As far as I can gather, the Japanese idea of an international settlement in Tsingtau differs radically from that which finds expression in the foreign settlements at Shanghai. They point to the fact that the international settlement at the latter place is a focus for trouble, the headquarters of Chinese revolutionary societies and movements, and a refuge for Korean and other conspirators, all safe from police interference. The Japanese believe that if Tsingtau is to be internationalised, provision must be made for proper police control by some competent authority, and that this sovereign Power should be China. The Japanese point seems to be well taken, as the creation of another international port that will serve as a safe refuge for conspirators against the authority of the central government of China should be guarded against in the interests of all nations. The settlement of this question now rests with China.

The official statement issued by the Japanese foreign office on June 15, 1920, in connection with the Shantung question is printed in full on pages 85-86 of this number of THE FAR EASTERN REVIEW. It will be seen from this document, that the Chinese government takes the position that as China has not signed the Peace Treaty with Germany, she cannot negotiate directly with Japan on the question of Tsingtau on the basis of that Treaty. The Chinese government also defends its refusal to negotiate with Japan direct because it is alleged that the people of China have assumed a strongly antagonistic attitude against such direct negotiations. In

other words, the Chinese government, acting upon outside advice, has now determined to have this question brought before the League of Nations or some other international convention.

It is doubtful at this time, whether China will be permitted to seek a solution of her Shantung troubles by resort to an international conference, as the original issue has since been expanded to cover the application of the Manchurian Treaties arising out of the Twenty-One Demands. China, at the Peace Conference, lost her golden opportunity to have the Shantung question adjudicatated on its merits as a separate issue. In the face of the secret agreements, under whose provisions Great Britain, France, Italy and Russia were compromised to support Japan at the Peace Conference, the Chinese delegation (influenced by their American advisers), insisted upon converting the Conference into a court for the trial of Japan.

In explaining the attitude of THE FAR EASTERN REVIEW on this question, it may be said that in response to an urgent cablegram from Peking, the publisher of this magazine obtained from the American secretary of state in May, 1915, an assurance that the American government would urge an international convention at the termination of the war in which the *whole* case of China could be presented and her status definitely defined for all time. On three subsequent occasions, when confronted with serious Far Eastern questions, the state department publicly reiterated and emphasized its set determination to refrain from any direct intervention in Far Eastern affairs, no matter what might arise, until the termination of the war, and then at the Peace Conference [or a separate convention to be called for the purpose], to have the *whole* case of China brought up for discussion and adjustment.

This brief outline of facts will explain to our readers why THE FAR EASTERN REVIEW has criticised the attitude of the American and Chinese delegations to the Peace Conference. With our knowledge of the facts, we were justified in believing that when the time arrived to carry out the above promises to the American nation, the status of China could have been amicably settled on a basis equitable to all concerned. We were, therefore, opposed to any course which rejected this golden opportunity and which concentrated the fire of the delegation upon any one nation, especially when that nation was Japan, who held the promises of the other powers to support her claims. From the outset of the negotiations in Paris, we advocated that the promises of the state department be lived up to and China's problem be placed before a separate international convention so that her *whole* case could be considered and acted upon. In this opinion we were supported by the British and French experts, who saw clearly the danger of turning the Conference into a tribunal for the trial of one of the most important Allies. The Conference had been called to make peace with Germany, not to raise issues amongst the victors.

We held that the rights of Germany should be surrendered in the Peace Treaty to the Allies, leaving Japan or some other Power as temporary trustee until such time as a separate international convention of interested Powers could be convened to adjust the many complicated questions that go to make up the problem of China. We felt then, as we do now, that the higher interests of the Chinese people would have been greatly advanced by adhering to this program, but unfortunately these ideas failed to harmonize with the program of those determined upon "making an example of Japan." It is on record, however, that at the eleventh hour, Secretary Lansing attempted to snatch victory from defeat by proposing to the Council of Five that the plan outlined above be adopted. It was then too late. Mr. Balfour, who had signed the secret agreement with Japan on behalf of Great Britain, said "quite so" when Viscount Makino remarked that the Shantung question was outside the jurisdiction of the "Five" and in the hands of the Council of Three.

THE FAR EASTERN REVIEW has been consistent in its stand for a square deal for China on the Shantung question. Had our advice been followed at the beginning, all the subsequent trouble arising out of this question would have been avoided. Now, at this late date, when all other solutions have failed, we find the American advisers and defeated Chinese delegates vociferating to have the Shantung question placed before the League of Nations, the Hague Tribunal, *or a separate international convention*. The Chinese and their advisers have returned to our starting point, clamoring for the very thing that we so strenuously advocated at the outset, and for which we have been condemned and persecuted by the inner circle that has dominated American relations with China during the last four years. THE FAR EASTERN REVIEW has the satisfaction of having been in the right, and of having lived up to its steadfast policy of securing real justice for China.

The troublemakers have had their day. The breach between Americans and Japanese has been perciptibly widened as a result of their activities following the Shantung decision at Paris. But the Shantung question has gone the way of all things in China—relegated to the classics. When it was seen that America had no intention to go to war with Japan over Shantung, China settled down to her old routine. It is a good time for Americans to stop and survey the situation. Let us look the facts in the face.

The facts presented in this Shantung number of THE FAR EASTERN REVIEW prove conclusively that there was no "discrimination against American traders at Tsingtau." There was no possibility for discrimination, because (as here testified) except the two American firms specified—the Standard Oil Company and the Katz concern—*there were no American traders on the job to suffer discrimination.*

* * *

The Shihchiachuang Railway

VISCOUNT Acheson, director of the British-American Tobacco Company (China), has just returned from a trip through that section of the famine area being traversed by the road from Shihchiachuang on the Peking-Hankow railway to Tsangchow on the Tientsin-Pukow railway, which is being built in aid of famine sufferers and towards the construction of which the British-American Tobacco Campany made a generous donation of $100,000.

The line is divided into two sections, a western and an eastern and for the time being work is being confined to the western section which consists of five divisions of 22 kilometres each. Work has been started 13 kilometres from Shihchiachuang and has been completed for about nine kilometres, the embankment being from six to eight feet high and 18 feet wide at the top. The point of junction with the Peking-Hankow railway has not yet been determined upon.

On the eastern section work has been temporarily suspended owing to the kilometres of the first division of the western section being 75 per cent. constructed, and work on each of the other divisions is under way. On the eastern section about eight kilometres have been 15 per cent. completed.

The engineering work is in capable hands and it is estimated that 1,500 men of each division, if working to full capacity, could complete the line in two months. The soil is very easy to work being composed of clay or clayey sand. The embankments are never more than ten feet high. Luckily the winter has not been very severe and it is doubtful whether the ground has ever been frozen to a greater depth than eight feet.

The arrangements made by the central authorities have, says Lord Acheson, been most efficient especially as regards organization and administration. The ground has been surveyed over a practically level surface for the whole length of some 220 kilometres. The necessary gaps have been left for culverts and crossings for country roads. Ample tools were available and the arrangements for food, salt, coal, etc., as well as sleeping quarters, were all that could be desired. More labor could be put on the job, however, and this will be arranged for from the concentration camps now that the weather is easing up and the frost is thawing out. Lord Acheson says that judging by the number and size of the towns through which the highway passes, the road should be self-supporting from the start.—*North-China Daily News.*

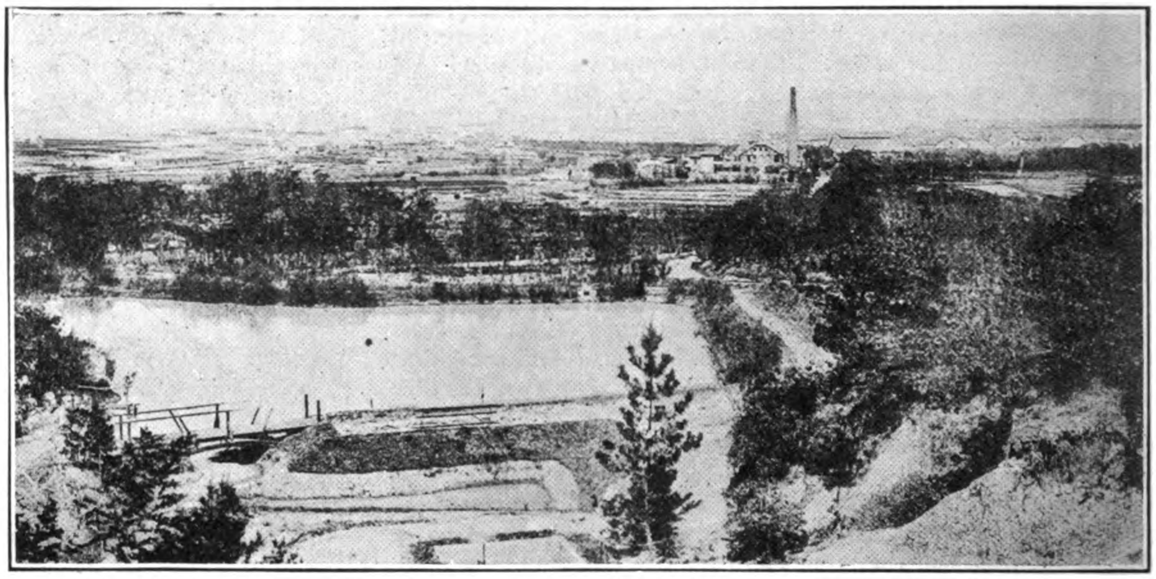
Tsingtau's Water Supply

A WATERWORKS IN A DRY RIVER

The Litsun and Peishaho Pumping Plants

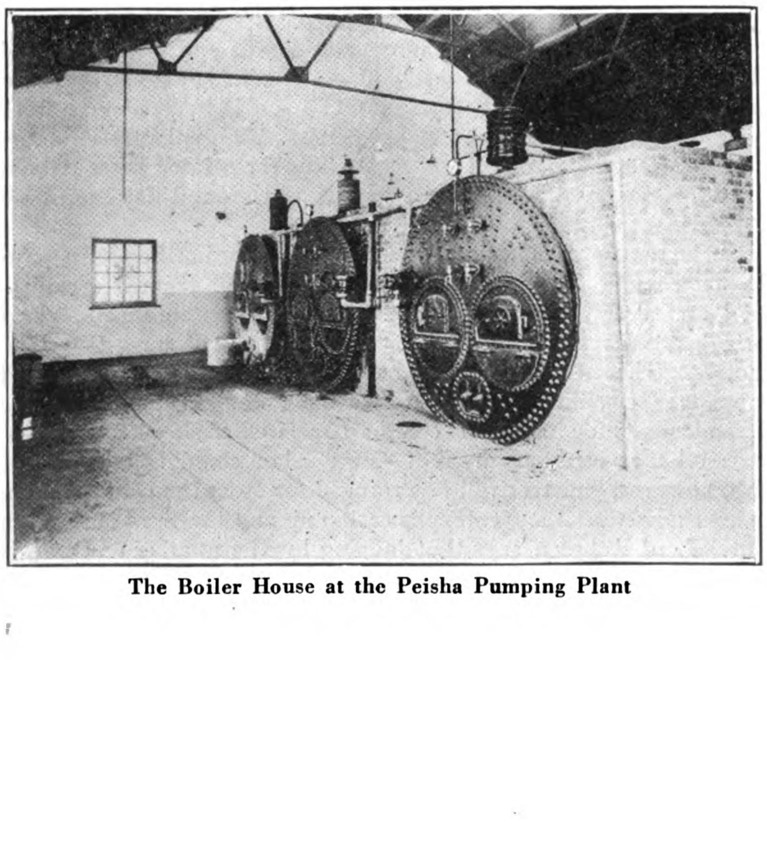
THE map of Shantung shows many rivers. On the popular Japanese maps of the province, these are colored a beautiful blue. Looking at these works of the lithographer's art, one gathers the impression that Shantung, like Japan, is blessed with an abundant rainfall with many deep, swift rivers running from the mountains to the sea. It is no wonder then that immediately following the Japanese occupation of the leased German territory, an enterprising Japanese in Tokyo, after one glance at the map, filed an application with the authorities for permission to operate a fleet of steamers on the rivers flowing into Kiaochau bay, or, that another energetic promotor requested the privilege of utilizing the waters of the Litsun and Peishaho rivers for a hydro-electric plant to furnish Tsingtau with current. They felt very sheepish and somewhat peeved, I am told, when, after building their castles in the air, they learned that the wide blue stretches on the popular maps were covered with water only after a rain, and then for a few inches and for a few days. At all other times, the Kiaochau rivers ran "dry." Rivers in eastern Shantung, adjacent to Tsingtau, are like the celebrated Manzanares in Spain. They can be navigated just as pleasantly and safely in a coach as on horseback. In other words, Shantung is a dry province.

The mean average rainfall in the Kiaochau district is 500 mm. as compared with 1,282 mm. at Hankow, 1,104 mm. at Nanking, 1,544 mm. at Tokyo and 1,373 mm. at Osaka. The rivers, with their limited watershed, rapidly discharge the surface rain fall into the sea and resume their habitual Sahara-like appearance. When the Germans started to lay out their new city on the bay of Kiaochau, they sought on all sides for water, but for many miles around there were no surface indications of an abundant supply for a large city. So they sank wells within the city limits and nearby country, but after 160 trials, they gave it up and in 1906 erected a pumping station and small waterworks at the Hipa river which supplied 600 tons of water per day. The catchment area of this river covered only five square miles, wholly inadequate to supply the demand of the growing port. Some other method had to be found to procure water.

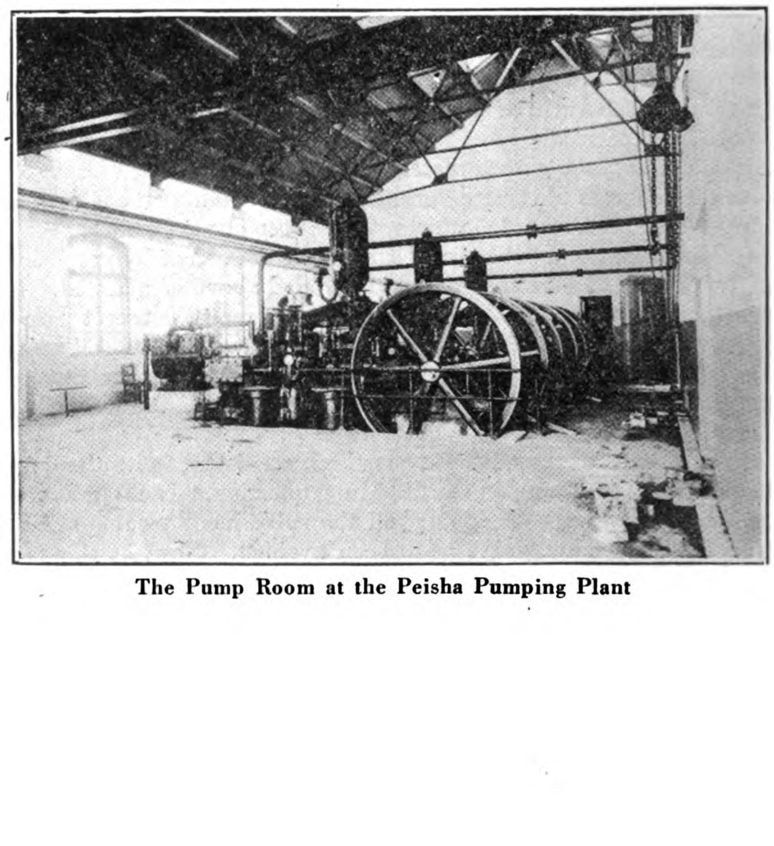


The Old Reservoir on Wakazura-yama, formerly Moltke Hill. Capacity, 2,000 Cubic Meters

Experiments and test wells showed that under the dry bed of the Litsun river an abundant supply of water existed at an average depth of 14 feet. The highest water level registered in the gravel bed is about 9 feet under the surface, the lowest level registered



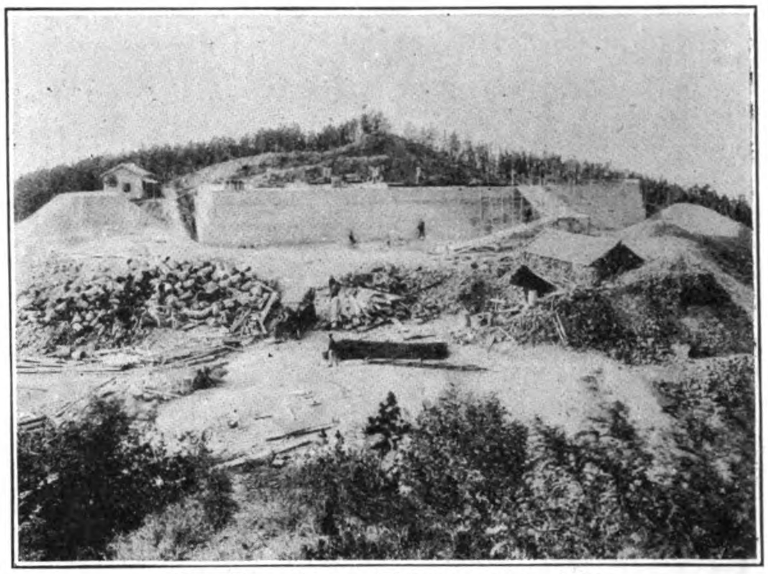
The Boiler House at the Peisha Pumping Plant



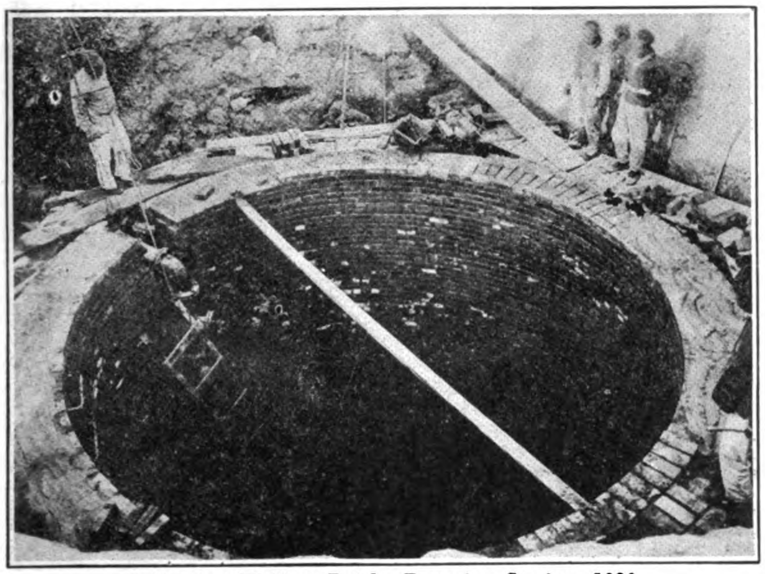
The Pump Room at the Peisha Pumping Plant

to date, is about 19 feet, leaving about 20 feet of water in the basin at the dryest periods. The borings on the bank showed a top layer of clay ten feet in depth, then 30 feet of sand and gravel down to bed rock. Here the Germans decided to establish their water station and pumping works, seven miles from the port. The plant was completed in 1909. The system adopted was most ingenious, and the plant is perhaps the only one of its kind in Asia. A chain of thirteen wells were bored, and six inch heavily tinned copper pipes sunk in the cavity before withdrawing the protecting outer iron casing. Near the lower extremity, for a length of ten feet, the copper pipe was perforated to permit the entrance of the water from the gravel bed. These pipes are all 40 feet in length,

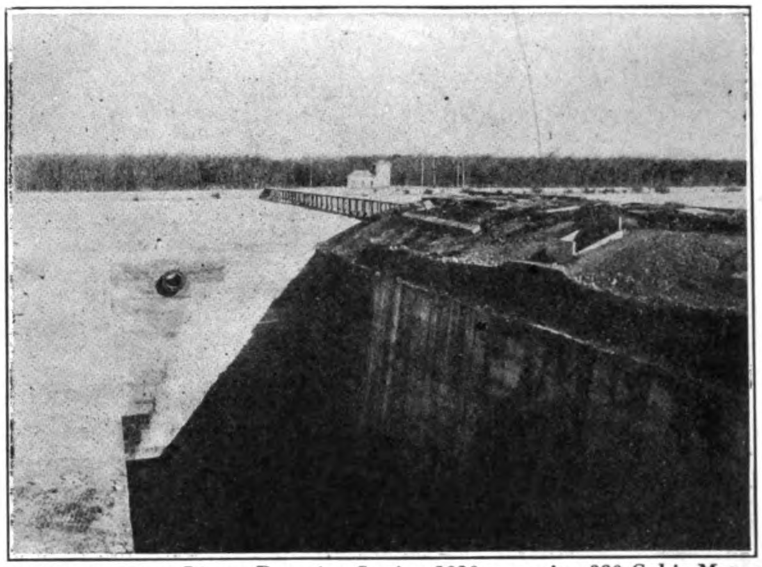
Top of New Reservoir on Wakazura-yama, 1921. Capacity, 4,000 Cubic Meters



New Reservoir on Wakazuru-yama, 1921

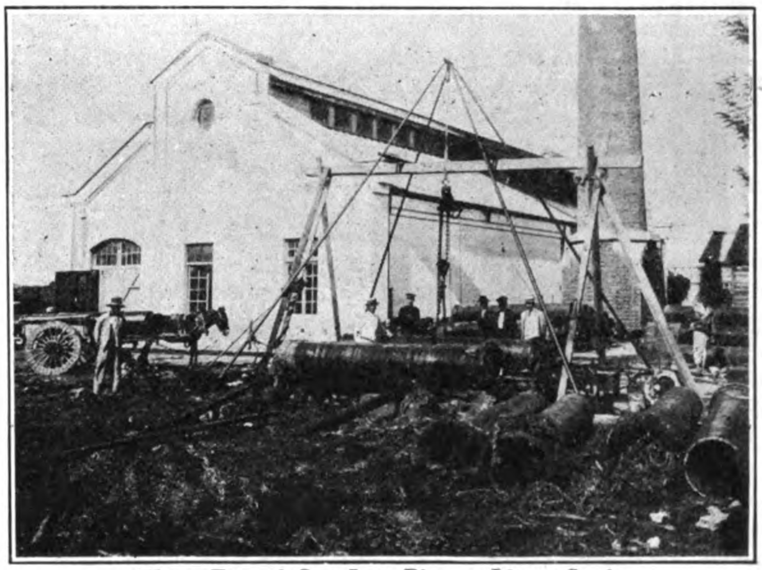


Collecting Well at Peisha Pumping Station, 1920

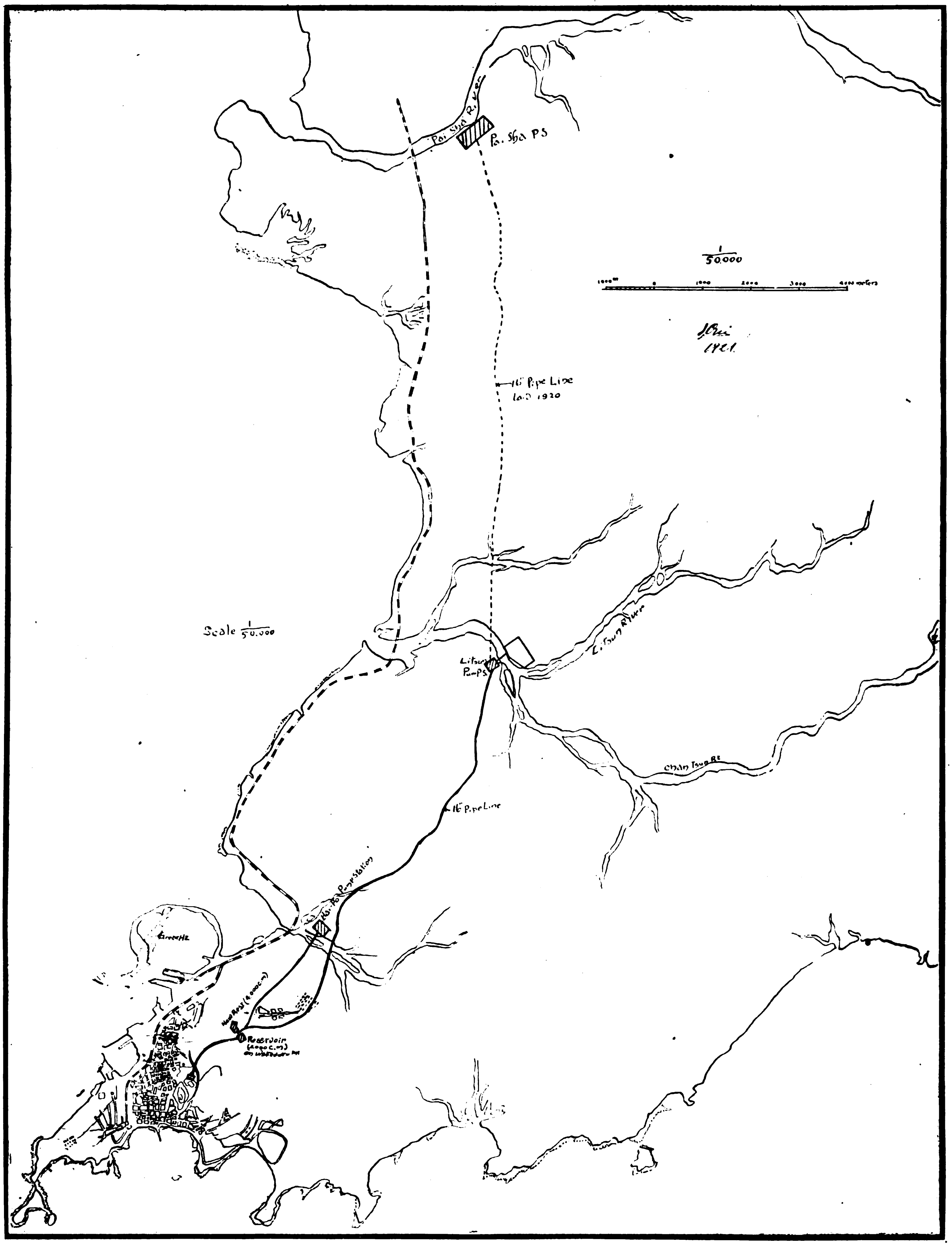


Sub-Reservoir at Litsun Pumping Station 1920, capacity, 380 Cubic Meters

Laying Pipe Line from Peisha to Litsun Stations



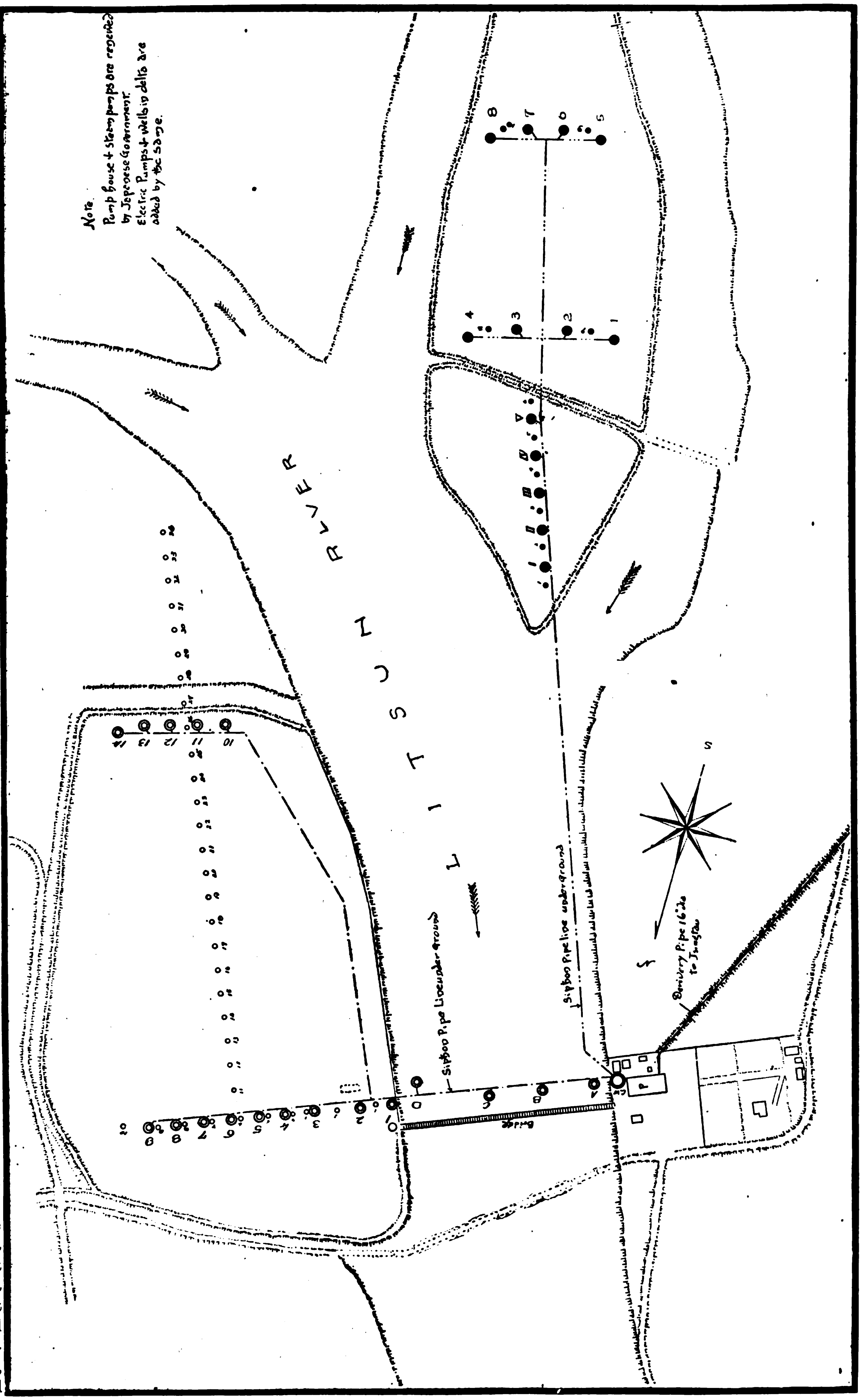
Water Test of Cast Iron Pipe at Litsun Station



MAP OF THE TSINGTAU WATER SYSTEM

reaching down to bed-rock. The upper ends are capped, and all connected together with a pipe leading to a vacuum pump in the pumping station, which keeps a constant flow of water from the wells into the underground collecting tank by the siphon system.

The Litsun river collects the water from an area of 40 square miles, and the plant installed on the above principle provided about 1,800 tons of water per day, which met the requirements of the city up to the time of the Japanese occupation. When the Japanese forces approached the city, the Germans withdrew from the waterworks, destroying the pumps and machinery. In doing so, they cut off their supply of water and were compelled to rely on the filled reservoirs and local wells. The Japanese engineers confess that when they examined the Litsun pumping plant, they were puzzled to understand where the water came from. They found the tops of thirteen pipes sticking up three feet above the ground in the woods on the opposite banks of the river 1,200 feet from the collecting well, but could find no connection. It was not until a German prisoner explained operation of the system that they understood, and by the time the city was surrendered, they were well along with the restoration of the plant. Two of the old German Lancashire boilers were repaired. The three pumps were hopelessly ruined, so a new set was ordered at once from the Osaka Iron Works. The plant at present is equipped with three double-acting, cross-compound, condensing fly wheel pumping engines, with



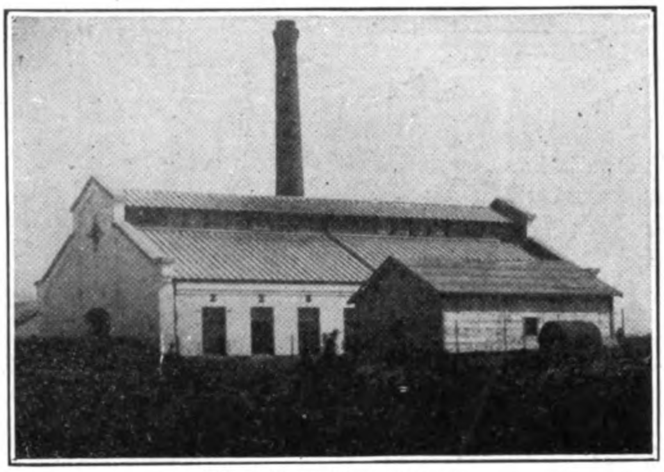
P. Pump House with 3 Steam Pumps (capacity 125 cubic meters h. each) and 3 Electric Pumps (capacity 500 cubic meters h. each)
C.W. Collecting Well (dia. 3 meters. 9.40 meters depth)
A.B.C.D. Pipe Wells for Condenser use } Pipe dia. 6″, 40-ft. long
1 to 14@ Pipe Wells for Drink Water }
1 to 34° Surveying Pipes of Water Line under ground
1 to V. and 1 to 8● in delta Pipe Walls } Dimension the same as above.
1 to 10● in Δ Surveying Pipes }

Litsun Pumping Station Showing Location and Connections of Wells

a capacity of 125 cubic meters per hour each. Two of the old German boilers are in service, while a new one has been furnished by the Sakaigawa Iron Works of Osaka. The water is pumped from the collecting tank through a 16 inch pipe line, seven miles to the reservoirs on the summit of Moltke Hill, renamed by the Japanese, Wakazuru-yama. The original German reservoir at this place had a capacity of 2,000 tons. This has been enlarged by the Japanese by the addition of another reservoir alongside the old one, with a capacity of 4,000 tons. A third one is now being planned. There is also a small reservoir on Observatory Hill.

The Japanese have enlarged the supply of the Litsun station, by driving 15 new wells in another part of the river, employing the same system, and have expanded its pumping capacity by the addition of motor driven turbine pumps. There are three sets of two stage, motor-driven turbines, each with a capacity of 500 cubic meters per hour or delivering 150 cubic feet per minute at 1,440 r.p.m. The motors are 150 horse-power operated by current supplied from the municipal plant at Tsingtau. These motors and turbines were furnished by the Kansai Kosaku-sho, of Kobe, Japan, and make a highly presentable appearance. This plant is not yet in operation, but is expected to be placed in service shortly, when the old steam plant will be held as a reserve.

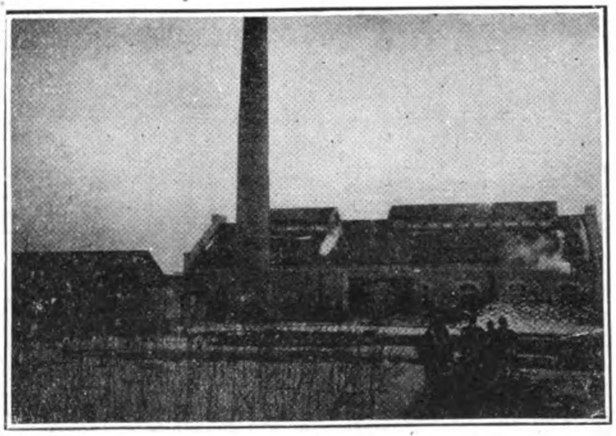
Well Pipes Sunk in Forest at Litsun Station



The Litsun Pump House

Row of Test Pipes to Determine Depth of Water in Collecting Field at Litsun

With the growth of the city, the Japanese engineers have been compelled to go further afield in their search for water, and selected the next large river called Peishaho, fourteen miles from Tsingtau, as the site for a new pumping station. The catchment area of this river covers 80 square miles, and at a suitable point near the mouth, a new station, built on the same lines as the one at Litsun river, drawing water from fifteen wells was completed in January, 1920. The equipment is identical with the Litsun steam plant, but with some improvements in the machinery, which consists of three horizontal double-acting, plunger pumps with water cylinder of 220 mm. diameter with a capacity of 125 cu m. per hour with horizontal cross compound condensing engines, cylinders 280 x 440 mm. and 500 mm. stroke, 60 r.p.m., furnished by the Osaka Iron Works in 1920. There are three Lancashire boilers, 7 feet in diameter and 28-ft. 4-in. long from the Sakaigawa Iron Works. The fifteen wells can supply 8,000 tons of water per day. A 16-inch pipe line discharges into the Moltke Hill reservoir, 14 miles away. An additional 16 inch pipe line is now being laid from the Litsun station to the reservoir. The cast iron pipe is made in Osaka. A new road 7 miles in length has been built connecting the Litsun and Peishaho pumping stations, following the pipe line. All depressions and river beds along the road have been paved with heavy stone blocks.



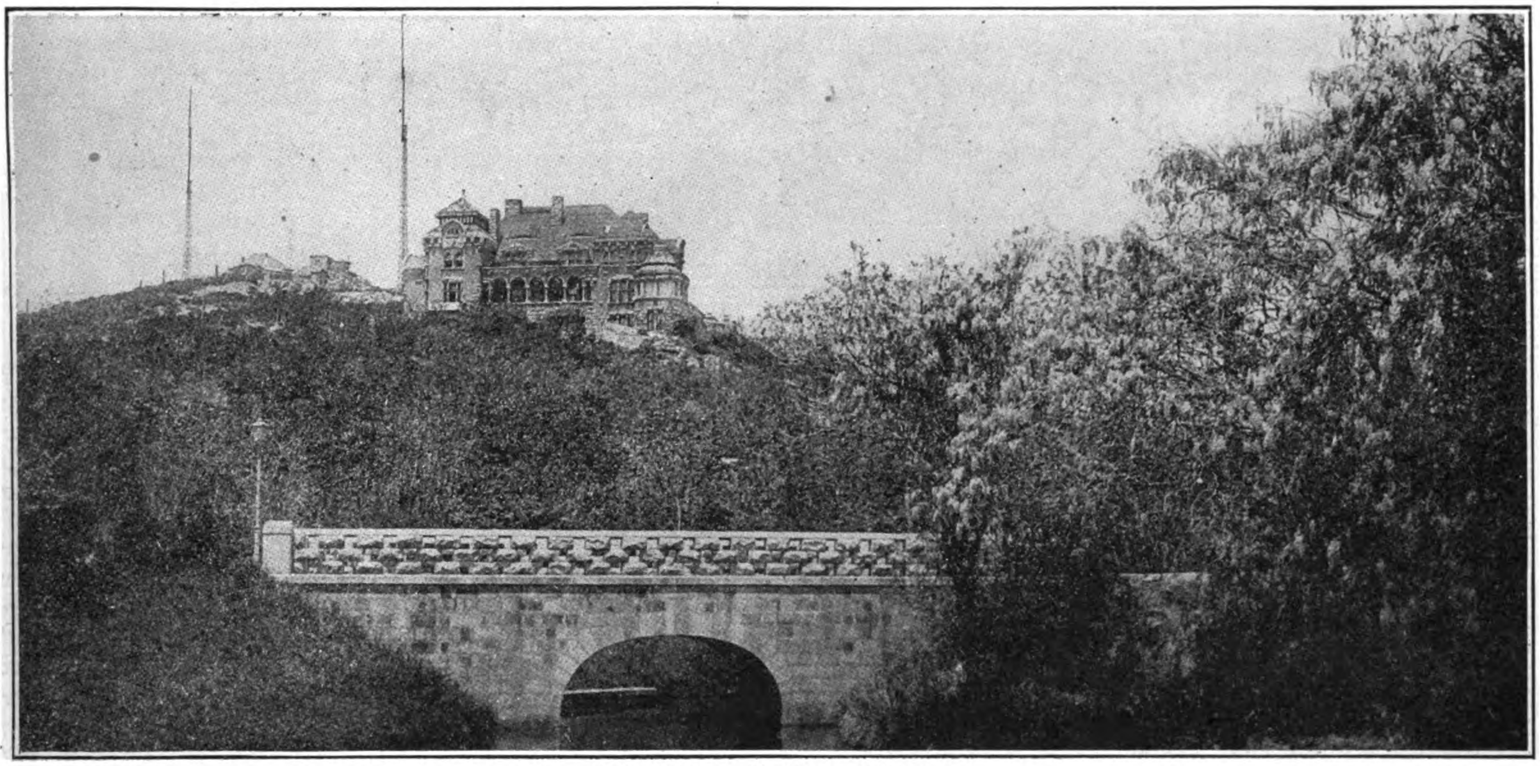
The Peisha Pump House

At the Litsun station a forest covering an area of 120,000 sq. yards has been planted where the wells have been sunk to protect the well area from contamination. Alongside each well pipe, is a smaller test tube which reaches down to bed rock, and at regular intervals soundings are made to register the depth of water. At the office of the water department in Tsingtau is installed a Barr & Lennox electric water level indicator, which records for every hour the amount of water used and the level in the reservoir. This interesting and indispensable instrument is made by Glenfield & Kennedy, Ltd., of Kilmarnock. The pumping plant at Peishaho is also equipped with its own electric lighting set made by the Osaka Electric Works. The total length of water mains in Tsingtau before November 1914, was 87,632 meters, to which the Japanese have added 36,301 meters up to September 1920. Over $1,000,000 gold has been expended by the Japanese authorities in rebuilding and improving the water supply since they took over control of the city.

The success of this most interesting engineering undertaking is due largely to the supervision of Mr. J. Oni, the engineer and director of the waterworks department of the civil government. He assumed charge at the time the Germans abandoned and destroyed the Litsun plant, and within two months had it repaired sufficiently to supply the city with water. Since then he has been in charge of this department and carried to successful termination the extensions and improvements. The Tsingtau waterworks are undoubtedly the most interesting and unique feature of the public utilities in the port and perhaps of the entire Far East.

The Phenomenal Growth of Tsingtau

A Monument to Honest Administration and Efficiency, Commenced by Germany and Completed by Japan

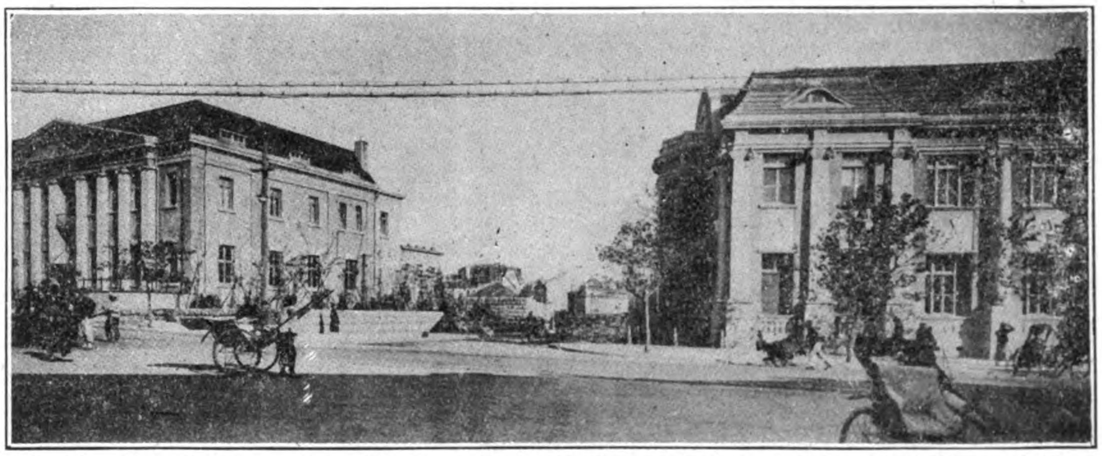


The Governor's House, Tsingtau

TSINGTAU stands as a monument to German creative energy and executive direction which transformed in sixteen years the mud hovel fishing village on the shores of Kiaochou Bay, into the most beautiful spot on the coasts of Eastern Asia. No matter how much we may criticize and condemn the political methods which led to the acquisition of the Leased Territory, the worst enemy of Germany must bear willing testimony to the organizing genius which finds expression in the beautiful parks and wooded hill sides, magnificent buildings, wide, clean streets and roads, and the public utilities which sets Tsingtau far above the other ports on the China coast.

Japan took over the work of Germany in November, 1914. Since then she has been subjected to a storm of criticism for every step taken in Shantung. But she has also built an everlasting monument by carrying forward the great work inherited from Germany. While Germany was chiefly concerned in establishing a fortified naval and military base for further territorial expansion in China, Japan has concentrated her energies in creating productive industries and developing sources of new wealth. The German forts have been destroyed, the barracks have been converted into schools. The naval base has been dismantled; the "little piece of Germany in the Far East" has been further beautified and expanded. Broad, finely surfaced and shaded roads and streets with ample side walks, rows upon rows of brick and stone foreign style residences and business blocks, numerous factories in a new district near the harbor, and other improvements proclaim that Japanese creative energy is on a par with, if not superior to, the much vaunted efficiency of Germany. Cavil and carp as we may about Japanese methods, no openminded critic after investigating the work of Japan in Tsingtau, can honestly withold due praise and credit for the wonderful development that has taken place under six years of Japanese administration.

The development of the city has been carried out along well conceived plans. Extensive street construction and building operations have completely changed the appearance of large sections. Over $15,000,000 (gold) has been expended upon public improvements, all met by revenues derived from municipal taxes and rents, receipts from electric light, water, post and telegraph charges, in



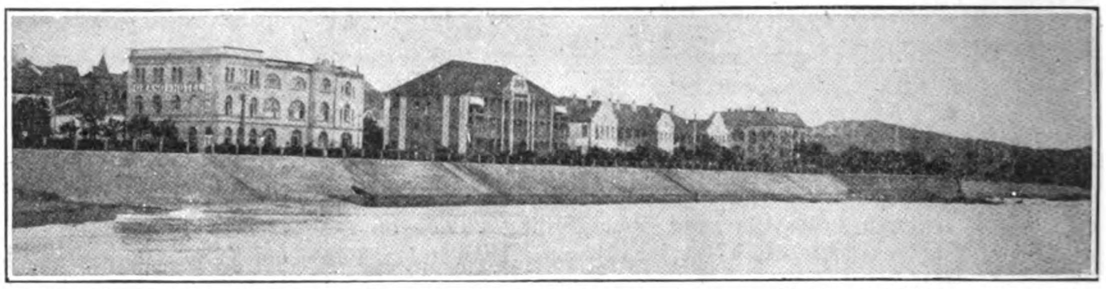
The Fine New Buildings of the Yokohama Specie Bank (on the left) and the Mitsui Bussan Kaisha (on the right) erected in the new Business District of Tsingtau

VIEWS OF TSINGTAU

Huge German Barracks at Tsingtau, Converted into a School House by the Japanese Military Authorities. The Middle School, formerly the Iltis Barracks

addition to the profits from the railway and its subsidiary enterprises. Tsingtau stands as an example of what can be accomplished in a few years in China under honest and efficient administration, where taxes are expended for the public benefit instead of filling the capacious pockets of grafting officials.

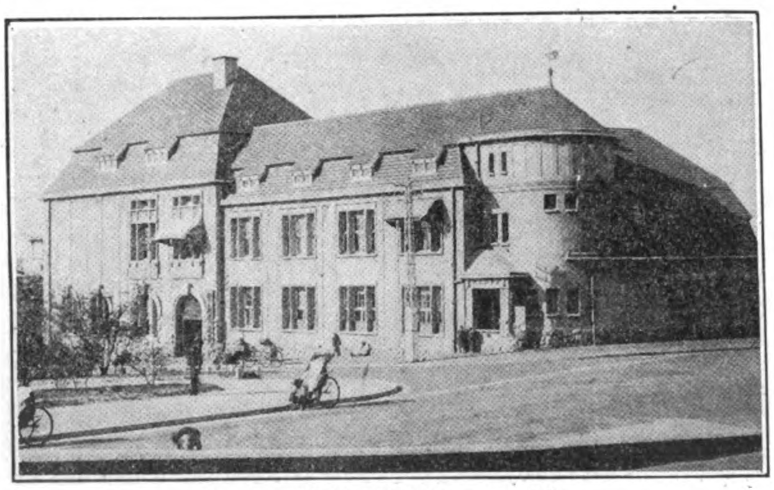
The total length of streets and roads within the municipal limits has been doubled, while the area covered by buildings has been trebled. The population which stood at 60,484 in July 1913, is now over 108,000, almost double. Japanese to the number of 20,709 have come into the city. One hundred and fifty Japanese concerns have opened branch offices in Tsingtau and fifty-five factories have been erected and placed in operation. Over $60,000,000 (gold) of private capital has been invested, outside of the purchases of German business and residential property by the Military authorities. This is estimated at nearly $1,000,000 (gold). A great reclamation scheme which calls for filling in about 30,000,000 cubic feet of tidal area near the great harbor, is well along towards completion at a cost of $350,000 gold, and the new land will be used for warehouse, storage and factory purposes. A new factory district was laid out, streets cut through and sewer and water pipes laid within two years. At the other end of the city, in the neighborhood of the beach, another residential section has been planned, new streets will be cut through, and other improvements carried out to make the district a highclass summer resort.



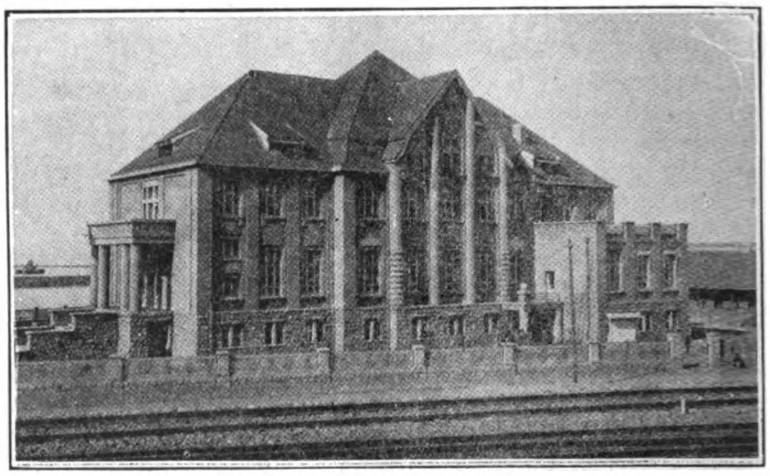
A Fine Piece of Foreshore Stone Bunding, Carried out by the Japanese Engineer's Office at Tsingtau

Public Works

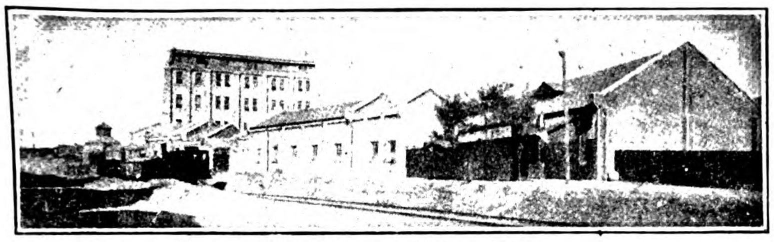
The laying out and building of new streets has been carried on with great energy. The area of the city under German rule was about 2,400,000 square yards. The Japanese have added 1,040,000 square yards completed with streets and buildings, and have under construction and improvement, an additional 4,000,000,000 square yards. The 1919 building statistics show a total area covered by buildings of 234,628 square yards owned by Japanese, 100,736 by Chinese, and 8,068 by Europeans and Americans. The capital invested in buildings is placed at Gold Yen 8,383,355.



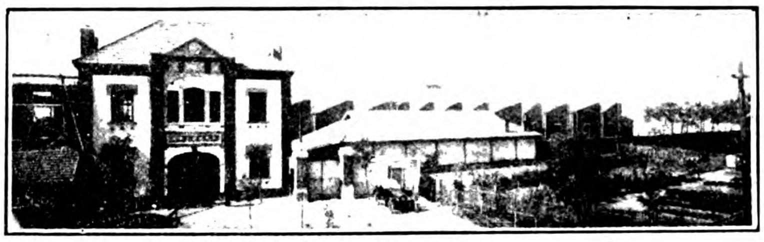
Tsingtau Civil Administration Office



The Custom House, Tsingtau



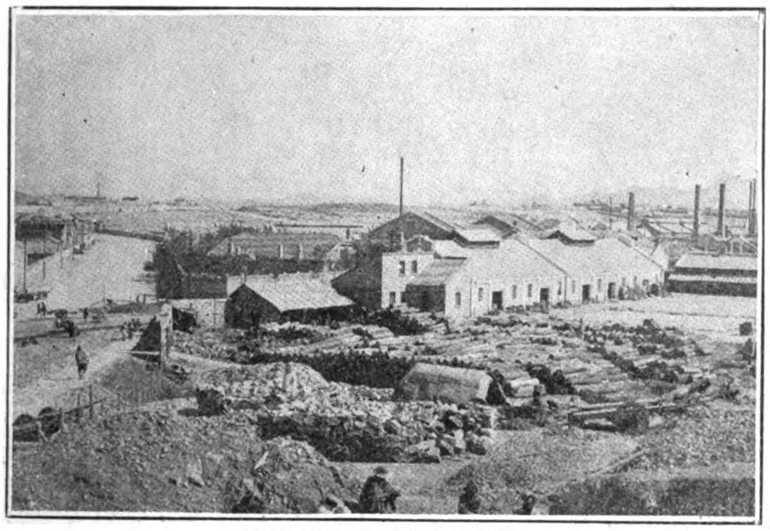
The Tsingtau Flour Mill



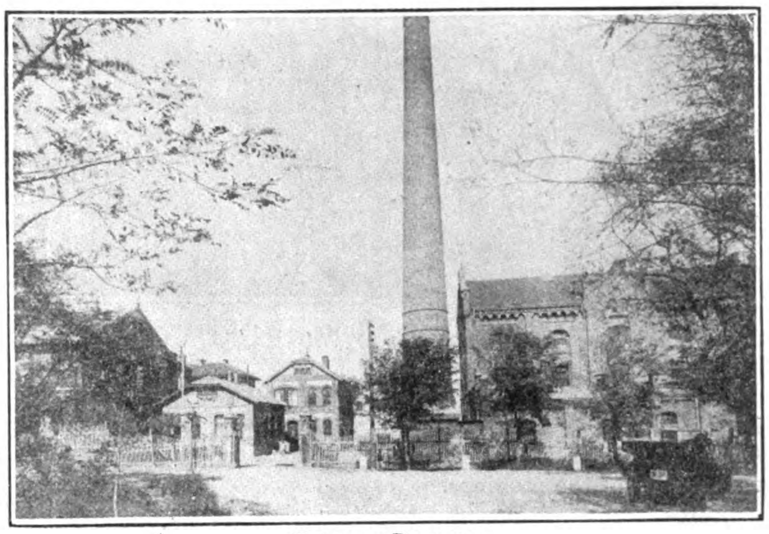
New Cotton Mill at Syfang

Roads and Streets

Within the municipal limits the Germans laid 65,300 meters of macadam and 3,400 meters of asphalt roads. The Japanese have added 27,290 meters of macadam and 13,300 meters of asphalt streets. Outside the city in the Leased Territory, the Japanese have added 17,390 meters to the 27,290 meters of macadam roads completed by the Germans.



Taitoichin Factory District



Tsingtau Brewery

Sewage and Drainage

The city is divided into four gravity drainage districts each with a central collecting well and pumping station. From these district stations the drainage and sewage is pumped to a central collecting well, from where it is again pumped through a long pipe line discharging well out in the bay. The Germans laid 79,740 meters of drain and sewer pipes, to which the Japanese have added 57,760 meters. Vitrified clay pipe is now being made near Tsingtau and is extensively used in the public improvements.

Although the purpose of these articles is to emphasize the industrial and purely engineering features of the development of the Leased Territory and Shantung under Japanese direction, no resumé of what they have done would be complete without some reference to the equally important advances in promoting the welfare of the Chinese and foreign community in other directions.

Education

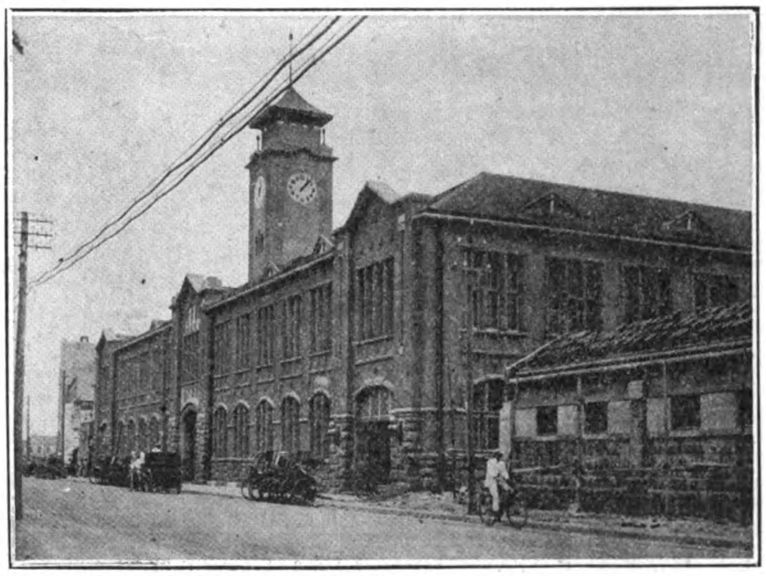
The temporary Japanese government has provided an object lesson to the Chinese in the establishment of schools for the education of the Chinese.

A few months after the occupation of the territory, the primary schools for Chinese established by the Germans a few years before were re-opened with re-modelled curriculums.

The number of these schools, originally 26, has been increased to 37, with a total attendance of 3,000 children, which is more than double the figure in German days.

A new feature of the educational system for Chinese initiated under Japanese rule is the admission of girls who were formerly excluded. Their percentage is gradually increasing.

The primary course extends over five years, and the text-books are selected from those used in the Chinese public schools in other parts of the country. The teachers at these schools are all Chinese except a few Japanese in charge of classes in the Japanese language.



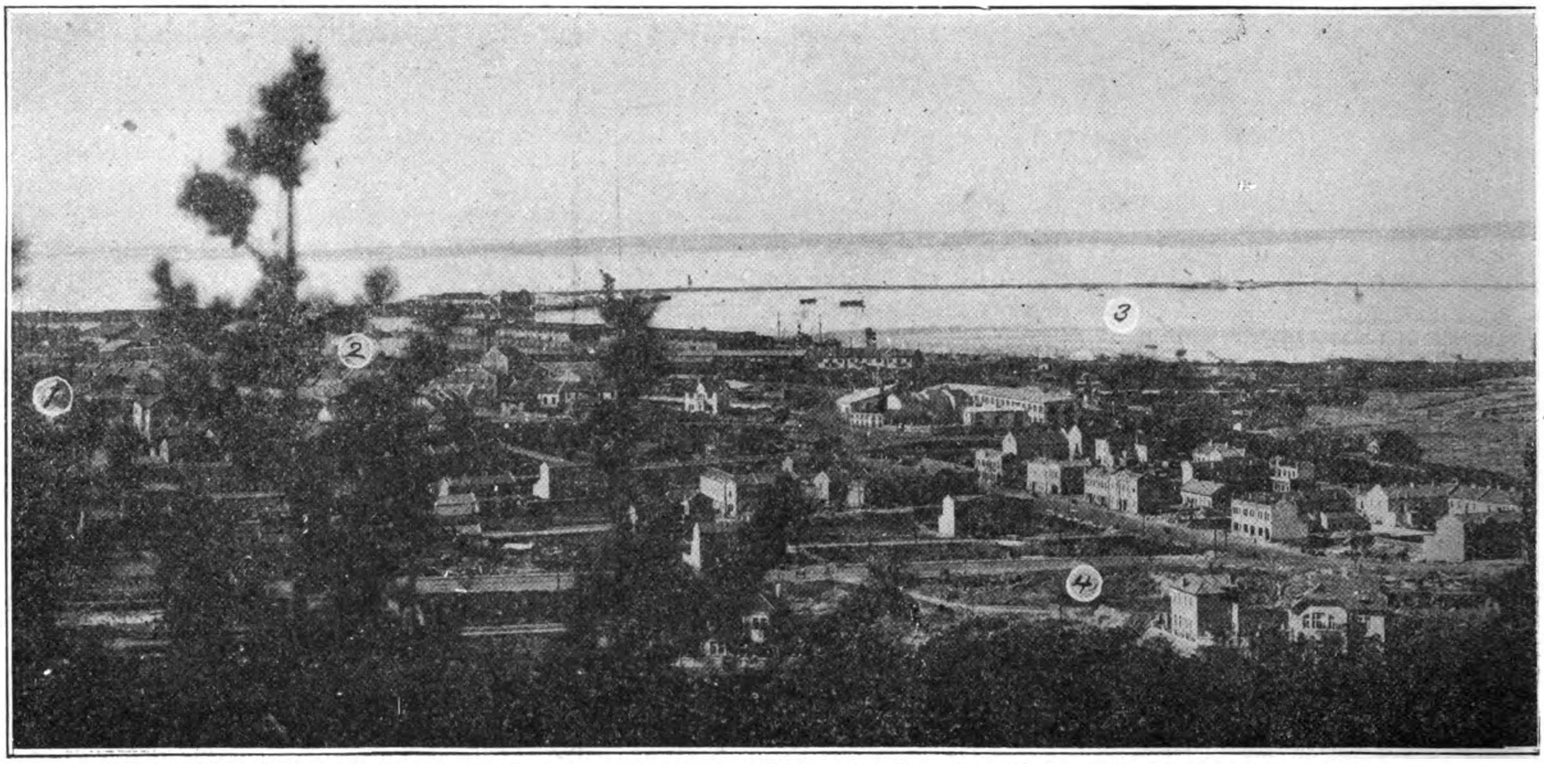
The New Market at Tsingtau

At the public school at Litsun a normal school course is provided to train native teachers.

The railway training school under the Shantung railway administration gives an excellent practical education to about 100 students, about sixty per cent. of whom are Chinese. The Chinese graduates make a notably good showing especially in the mechanical and telegraphy departments. So many Chinese youths apply for admission that a large number have to be turned away every year.

It is worthy of notice that since last year the doors of the Japanese middle school

Panoramic Views of the New Industrial



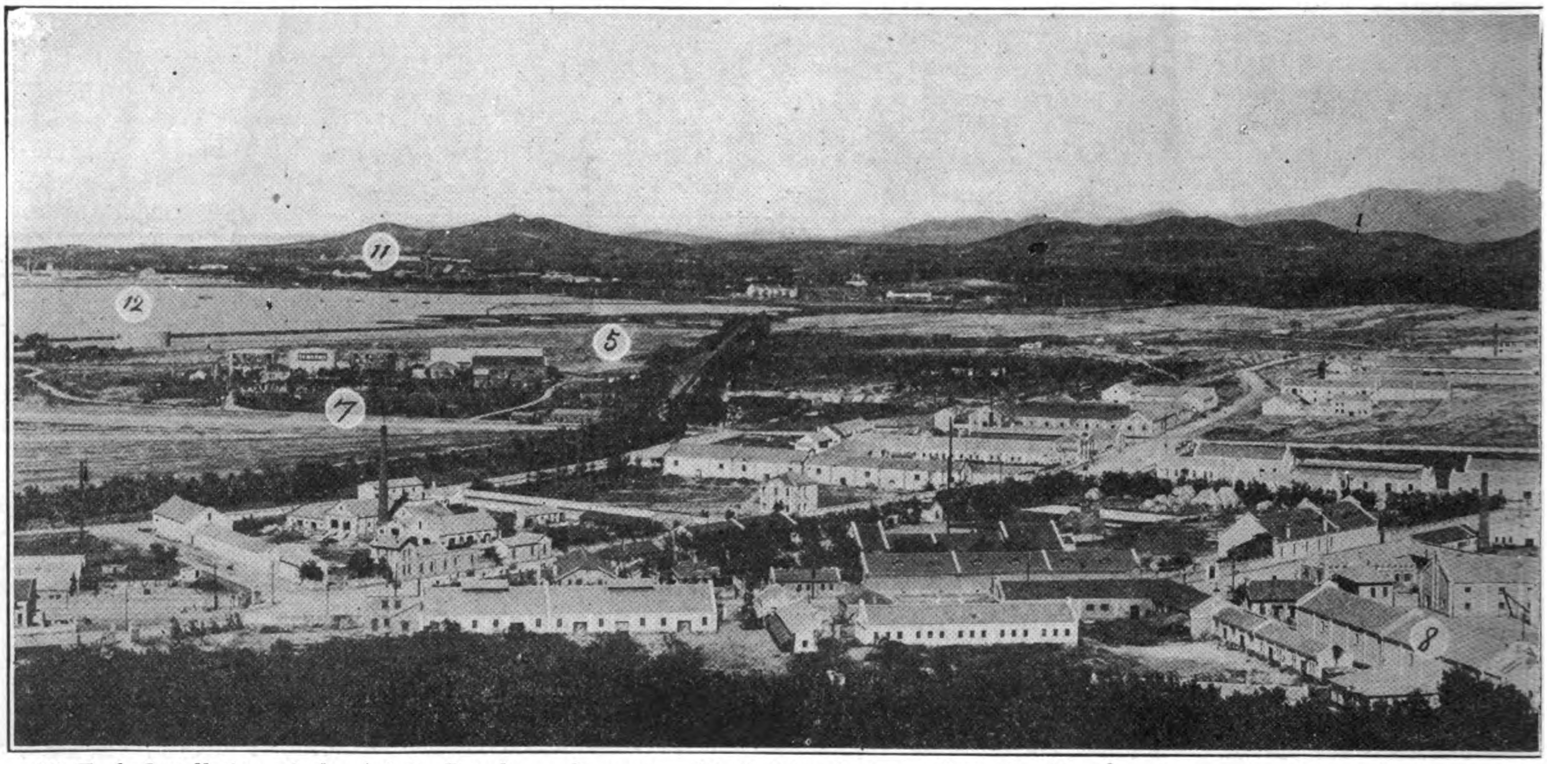
(1) End of the Old Town. (2) Entrance to the Great Harbor. (3) The Great Harbor. (4) Portion of New Town

in Tsingtau have been kept open for Chinese boys. This privilege has been taken advantage of by several promising boys from the interior of the province.

Hospitals.—An excellent system of hospitals where patients of all nationalities are welcome is maintained in the leased territory and along the Shantung railway.

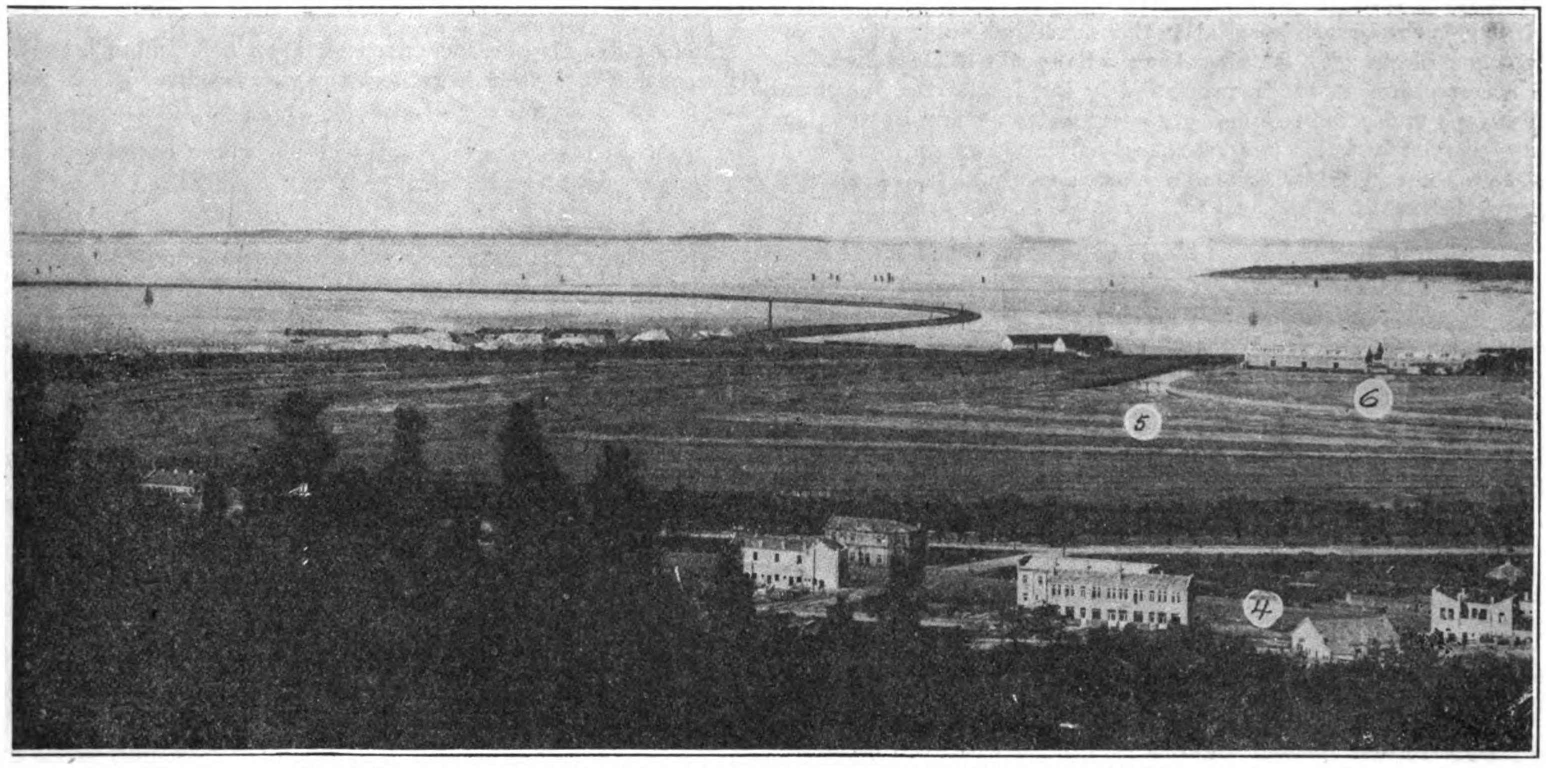
Especially worthy of notice are those in Tsinan and Tsingtau.

The Japanese hospital in Tsinan, the building and equipment of which cost about a million yen in silver was opened in October, 1915. Under the able leadership of Dr. T. Makino, the physicians and surgeons attached to this hospital have succeeded in a short space of time in winning the confidence of the Chinese to an extent



(7) Tank Installation of the Asiatic Petroleum Company. (5) Reclaimed Area. (11) The Town of Syfang, location of the Shantung Railway Shops. (12) Future Reclamation Project. (8) Factory District

District of Tsingtau, Built by the Japanese



(5) Reclaimed Area. (6) Tank Installation of the Standard Oil Company of New York

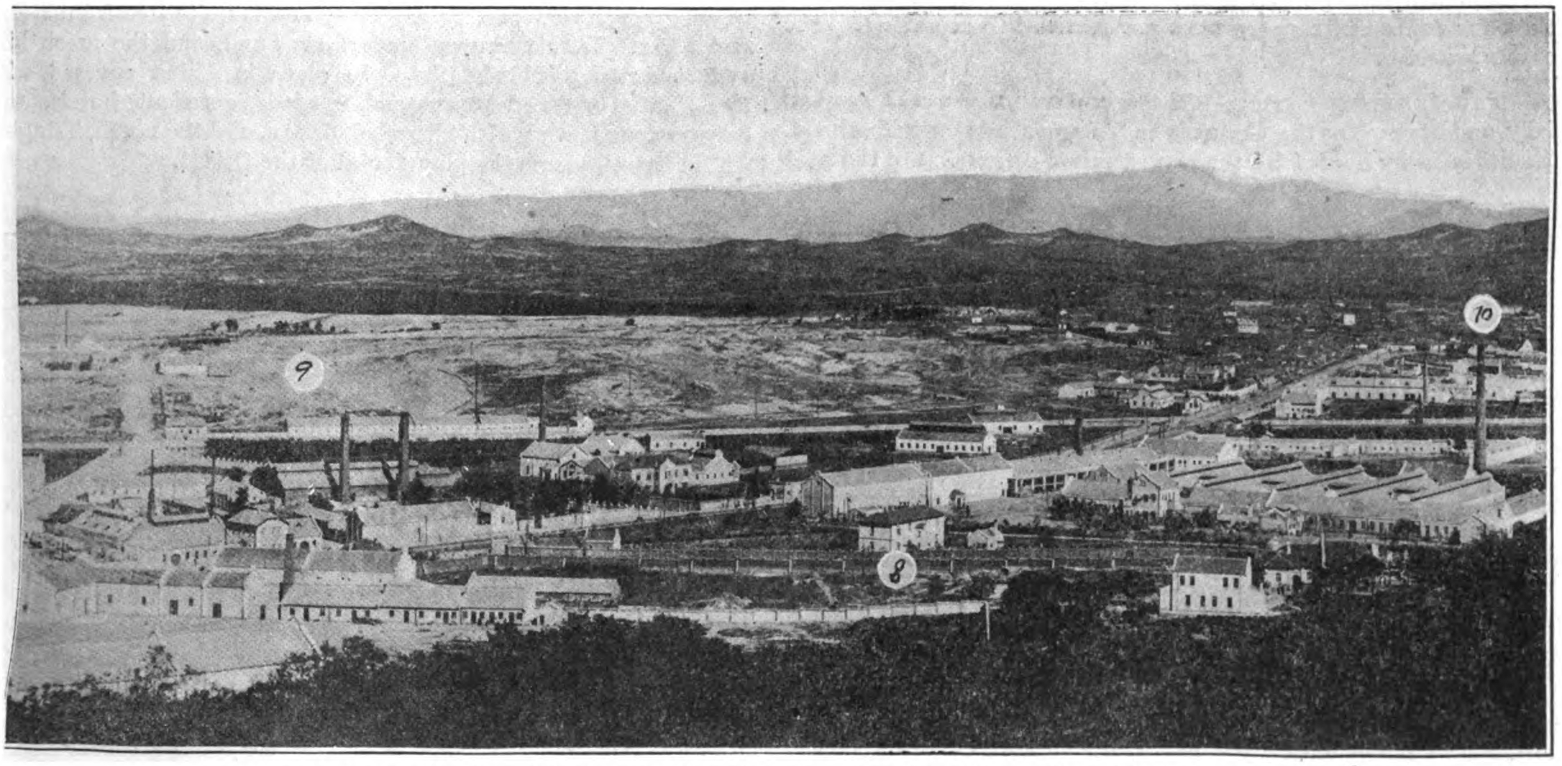
attained by few other medical institutions in China, foreign or Chinese. This may be seen from the fact that the number of Chinese patients treated during 1919 totalled 263,000.

This, however, does not represent the actual number of cases treated, patients being counted for statistical purposes as separate entities every time they visit the hospital.

About 35 per cent. of these are paying patients. A noteworthy fact is the increasing number of Chinese women who come for consultation.

Young Chinese girls are being trained as nurses, there being at present twelve taking the nurse's training course.

The main hospital at Tsingtau under the well-known ophthal-



(8) Factory District. (9) Area for New Factories. (10) The Chinese City of Taitungchen

mologist Dr. Bunji Nagano, is always taxed to the utmost limit of its extensive resources. Here, however, the proportion of Chinese patients treated is small, as there are two special establishments for them affiliated with the main hospital.

One is the branch hospital on Shinmachi, where treatment is given free of charge. Dr. Hayakawa who speaks Chinese fluently, an accomplishment which unfortunately but few of the Japanese physicians under the temporary government at Tsingtau have, is very popular with his patients. Out-patients average every day between 150 and 200, while the fifty beds for in-patients are always occupied.

The other hospital for Chinese at Tsingtau is the Puchi hospital, which is exclusively for paying patients. It was opened only in November, 1919, but is already very popular, there being in-patients not only from the interior of this province, but also from other provinces. Both at the branch hospital on Shinmachi and the Puchi hospital, there are several Chinese nurses trained under Japanese instruction and who, like their sisters at the Tsinan hospital, are doing excellent work.

THE EXPERIMENTAL FARM.—The experimental farm at Litsun was opened in June, 1917, for the purpose of conducting various experiments with a view to the improvement of agriculture in the leased territory and incidentally also in the adjacent districts.

The farm covers about 78 acres, and is planted with all sorts of grains, vegetables, fruit trees and other useful agricultural produce.

Experiments are also made in raising pigs, poultry, and bees for honey

Besides well-stocked specimen rooms there is a chemical laboratory where besides original research work, various analyses are made at the request of Chinese farmers. From the results of the experiments so far conducted, it has been shown that this part of China is particularly well adapted for the growth of American upland cotton, tobacco, hops, indigo plants, sugar beets, etc.

Much good has been done by holding periodical competitive agricultural exhibits, which have from the very beginning been enthusiastically participated in by the farmers of the territory.

The institution has become so widely known that applications for seeds and nursery trees are received from various parts of the province.

THE FORESTRY OFFICE.—Of the praiseworthy works successfully undertaken by the Germans in Tsingtau and neighborhood, the list is easily headed by the almost magic conversion of the bald and rugged hillsides into well-wooded slopes covered with many species of trees and shrubs. Following in their footsteps, the Japanese authorities have done much to extend the limits of the wooded sections, the total area newly planted with trees up to this spring being 1,350 acres.

Work has also been commenced upon a far more important scheme of afforestation to protect the water courses which constitute the main sources of water supply to the city of Tsingtau.

This plan when completed will mean the covering of over 22,000 acres with new forests.

Plants from the nursery are supplied to Chinese free of charge in an effort to encourage individual afforestation, the number so supplied during the past year being 235,000.

THE COMMERCIAL MUSEUM.—A good beginning has been made in organizing a commercial museum.

The building in which this institution is now housed is too small.

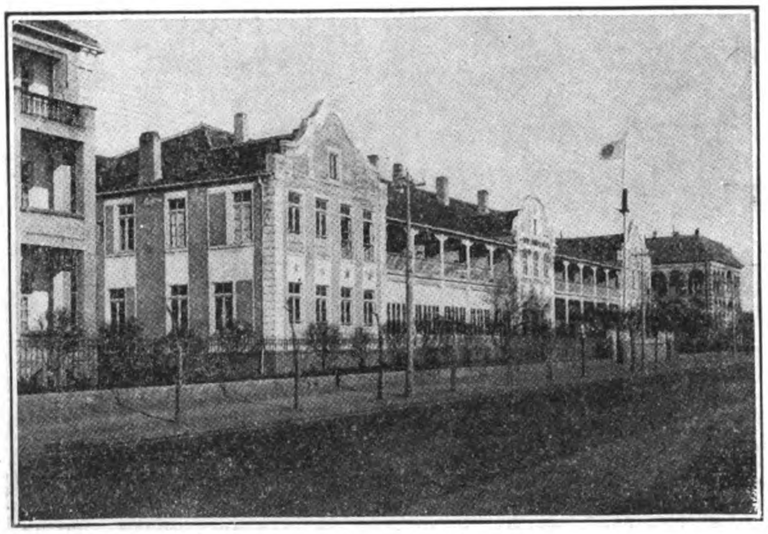
As it is, however, many valuable exhibits have already been collected, giving the visitor a fairly good idea as to the industrial, mineral and agricultural resources of Shantung.

The section devoted to the Japanese exhibits leaves much room for improvement.

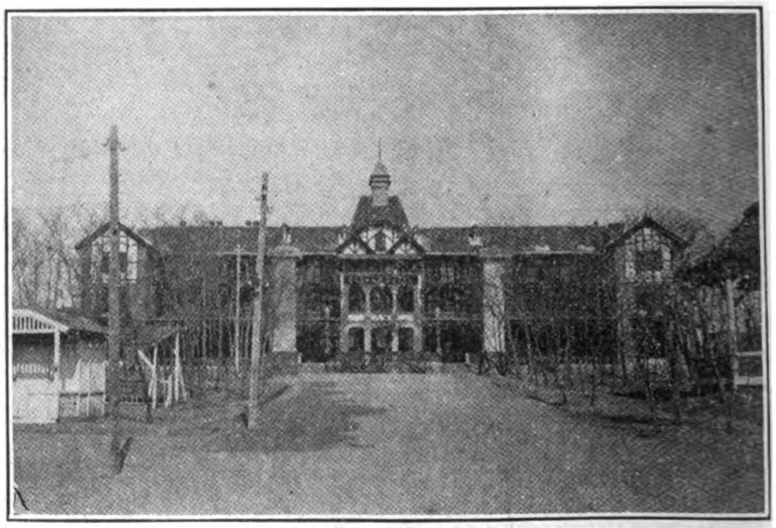
THE CHEMICAL LABORATORY.—Next door to the above institution stands a no less valuable establishment, a chemical laboratory.

It was only recently opened, but its usefulness has been so widely recognized by the local community, both Japanese and Chinese, that its staff of experts find it hard to cope with public applications for the analysis of mineral ores, water and other commodities. The establishment is provided with a large and well-selected library of scientific publications in different languages.

THE PLAYGROUND OF THE EAST.—Aside from the political, commercial and industrial features of Tsingtau, the place will always remain the favorite summer resort of Europeans in the Far East. It is well called the "Brighton of the East," the one spot on the coast of China where the foreigner can find rest from the heat and escape from the dirt and perfumes of Cathay. Its bathing beach shelves very gradually and is quite free from stones and rocks. With the open sea on one hand, and the green hills and mountains behind (the only place in China covered with trees), miles of excellent automobile roads, excellent hotels, and easy communication with Shanghai, Japan, and the north, Tsingtau will in time, become the playground of the Orient.

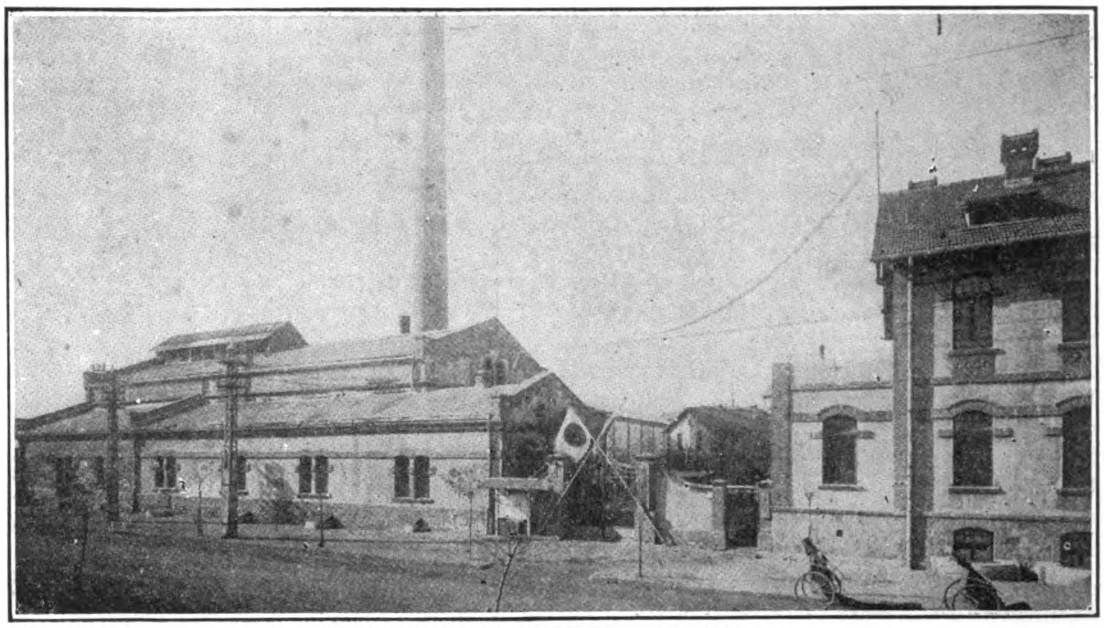


The Grand Hotel, Tsingtau



The Strand Hotel at Tsingtau Beach

Tsingtau Municipal Electric Plant



Municipal Electric Power House at Tsingtau

THE Tsingtau electric plant is operated by the electricity department of the civil administration. The original German plant was equipped with one Siemens-Schuckardt, 410 kilowatt and two Siemens & Halske 170 kilowatt alternating generating sets driven by vertical compound condensing engines. This was supplemented by a Siemens Schuckhardt 1,000 kva., alternator driven by a Gorlitzer turbine ordered and built in 1913, but not installed until after the Japanese occupation. The Japanese have added one 1,200 kilowatt, 3-phase, 50-cycle alternator, driven by a Parsons condensing turbine at 3,000 r.p.m., made at the Nagasaki works of the Mitsubishi Zosen Kaisha. In addition, there is now being installed another 3-phase generator of 1,500 kilowatt capacity, 3,300 volts, 3,000 r.p.m., from the German-Swedish Electric Company of Sweden, driven by a L. Jungstrom condensing turbine from the Swedish turbine works of Stockholm. The original steam generating plant consisted of two Lancashire and three German water tube boilers. These are now being augmented by the installation of three Babcock & Wilcox water tube boilers of 4,780 square feet of heating surface each.

Up to the first of January 1921, officials and official institutions were supplied with light and current free of charge. The official statistics of the plant show that in 1914 its capacity was 600 kilowatts, increased to 1,400 by the addition of the Mitsubishi-Parsons set, and again increased to 2,600 in 1920. The following table shows the number of 10 candle-power lights, horse-power for motors, and the revenue for the six years ending 1920.

Year		No. Lights	Horse Power	Revenue (Gold Yen)
1914	... ...	39,796	620	68,727
1915	... ...	53,556	620	134,021
1916	... ...	63,064	1,921	217,046
1917	... ...	77,599	2,075	311,628
1919	... ...	106,934	2,435	387,871
1920 (Nov.)	...	125,494	2,562	364,615

Electric power is supplied to the municipal pumping station at Litsun. The four municipal drainage pumping stations are also operated by electricity. The above statistics are in keeping with the growth of the city in other directions. The number of lights has about trebled, the horse power supplied to motors quadrupled, while the revenues have increased five hundred per cent. in six years, or since the plant came under Japanese control.

The Beach at Tsingtau

THE GOVERNMENT ABATTOIR AT TSINGTAU

ONE of the most interesting and profitable of the public utilities of Tsingtau is the government slaughter-house located on Taiseichin-dori. It is the most fully equipped institution of its kind in the Far East, having been constructed by the Germans at a cost of 850,000 marks, and equipped to slaughter 2,000 head of cattle in twenty-four hours. A great impetus was given to the business by contract for the supply of beef to the American army in the Philippines. The United States government has been buying beef for the troops in the Philippine Islands for the past four years, from the firm of Wm. Katz, Tsingtau. The contract this year is for 9,000,000-lbs., price Mex. $18.40 per 100-lbs., f.o.b., vessel Tsingtau, Chinwangtao, or Taku, at contractor's option.

Messrs. Okura & Co. bought one-half interest in Katz & Co.'s Tsingtau plant in 1918, for about $600,000 Mex.

United States government inspectors make post mortem and ante mortem inspections for all meat supplied on the United States government meat supply.

The capacity of the refrigerating plant of Wm. Katz is about 1,550,000-lbs. per month in the winter time and 1,000,000-lbs. during the summer months.

The extent to which the Far East is drawing upon Tsingtau for beef is indicated by the following tables compiled by the Japanese authorities:—

ANIMALS SLAUGHTERED IN THE GOVERNMENT ABATTOIR.

	Cattle	Calves	Swine	Sheep	Goats	Total
1915	8,135	214	5,319	276	32	13,976
1916	15,140	107	6,229	405	15	21,896
1917	25,672	55	6,702	400	105	32,934
1918	36,675	35	8,856	764	19	46,349

DESTINATION OF REFRIGERATED MEATS

Year	Japan	Manila	Vladivostok	Dairen	Shanghai	Total
1915	99	—	3,575	135	—	3,809
1916	88	4,733	5,266	390	23	10,500
1917	662	11,902	8,241	666	5	21,476
1918	7,656	19,115	3,156	617	—	30,544

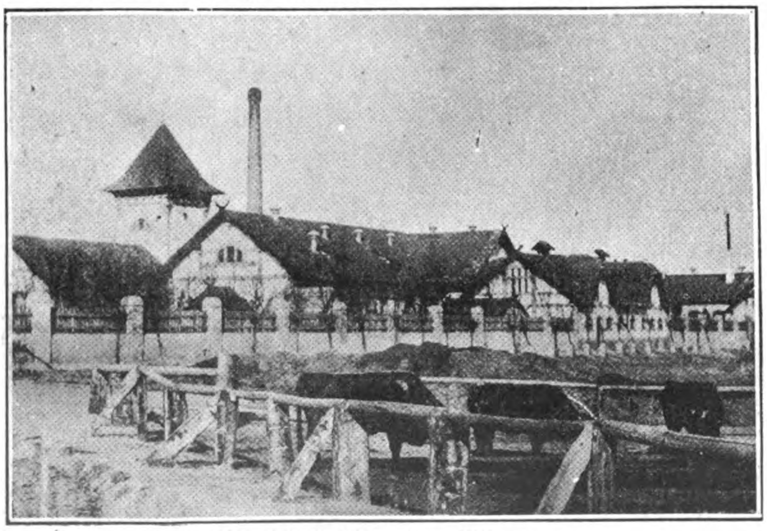
INCOME OF ABATTOIR

FOR FISCAL YEAR, BEGINNING APRIL 1, AMOUNTS IN SILVER YEN.

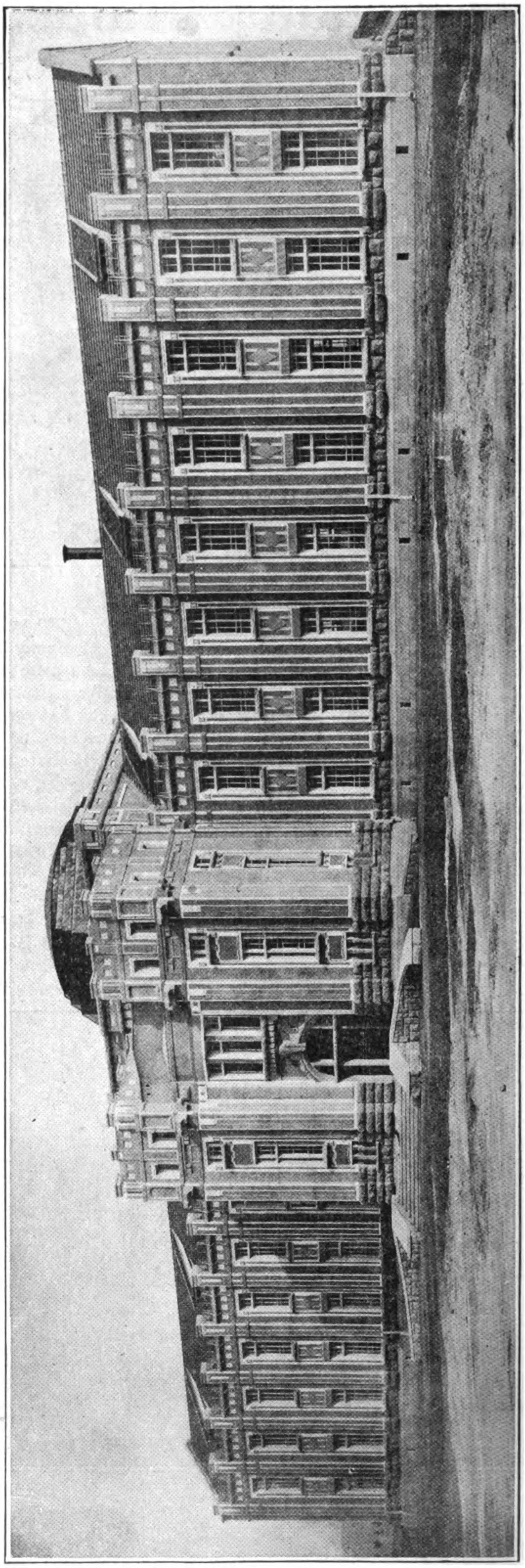
1915, 37,219; 1916, 70,522; 1917, 122,685

The expenses of operation are very slight, so the income begins to assume importance as a source of revenue for the support of other municipal departments. The business gives every sign of still further expansion, as the cattle are drawn from several adjacent provinces. The practice is for the Shantung drovers to buy young calves in the neighboring provinces of Chihli, Shansi, Shensi and Honan and sell them to the Shantung farmers, who fatten them for the Tsingtau beef trade.

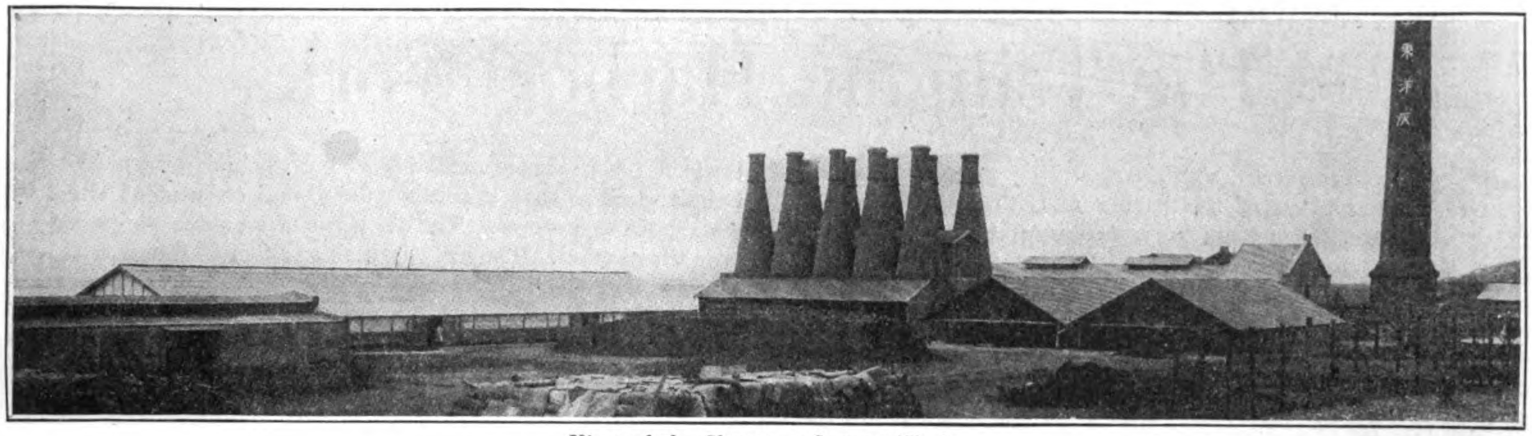
The Japanese are using more and more beef as an article of diet. It is now part of the army and navy ration. It is understood that the Japanese army will call for tenders in the near future for about 500,000-lbs. It is a beginning that may develop into a great business for Tsingtau and bring added prosperity to the Chinese farmers.



Municipal Abattoir at Tsingtau



JAPANESE HOSPITAL AT TSINGTAU



View of the Shantung Cement Works

The Shantung Portland Cement Works

THESE works were established in September 1917, at Tsankau, near Tsingtau, by the Santo Kogyo Kaisha, Ltd., a Japanese company presided over by Mr. Suyeo Tanaka, a well-known Japanese millionaire. The managing director is Mr. Chikaji Kuga, the ex-chief secretary of the Shantung railway administration, to whose investigations and promotion is due the organization of the company and the erection of the plant. The capital of the company is Y. 1,000,000, one-half paid up.

The machinery for the plant was all made in Japan, the two tube mills by Hirotani & Company and the two crushers by the Mitsuyoni firm, both of Osaka. The original boilers were an old set of German water tube affairs purchased in Tsingtau. These have been superseded by a Lancashire boiler of Japanese make. The engine was bought from the Aichi Cement Company of Japan. It is a Rotey tandean-compound condensing engine made in 1896, still doing good service. The output is about 300 casks of 380 lb. each daily, or 8500, monthly. The plant is to be expanded in the very near future to 700 casks per day, or 20,000 per month.

The quality of the cement is said to be superior to that made in Japan because of the high quality of the limestone (brought from Yangtze, in Shantung), the clay, and the Tsuchuan coal which is specially adapted for the manufacture of cement.

Reports on the cement have been made by the central laboratory of the South Manchuria Railway and the government laboratory at Tsingtau. They are as follows :—

I. Chemical composition:

Insoluble Residue	0.30
Silica (Si0 2)	20.14
Alumina (al2 03)	5.00
Oxide of iron (Fe2 03)	3.40
Lime (Ca 0)	64.34
Magnesia (mg 0)	1.34
Sulphuric anhydride (So 3) ...	1.50
Potash (K2 0)	0.44
Soda (Na2 0)	0.26
Loss on ignition at 212° C.... ...	3.17

II. Fineness:

Percentage Residue on 900 sieve ... nothing

III. Setting time:

Initial set	2 hours
Final set	5 hours 42 min.

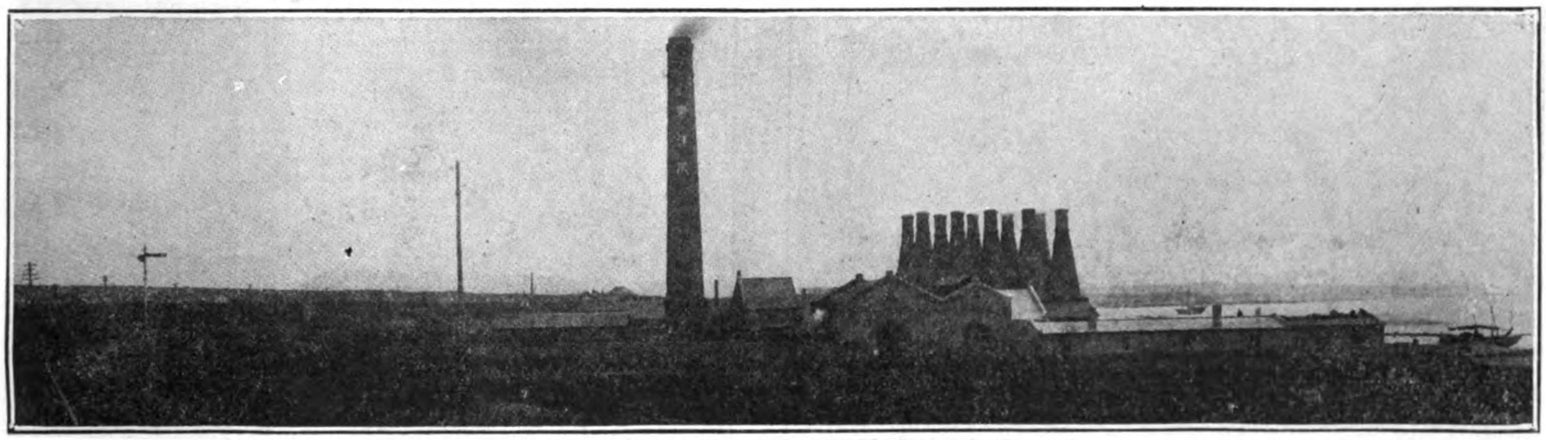
Note.—Percentage of water used to make post 26%. Temperature of Laboratory room 19.5° C.

IV. Soundness:

Result of 1 hour and 3 min. boiling test ...	good
Result of 28 days kept in water	good

V. Tensile Strength:

Cement	7 days	805 lbs.
,,	28 days	926 lbs.
,,	and Sand (1 and 3)	
,,	7 days	364 lbs.
,,	28 days	434 lbs.



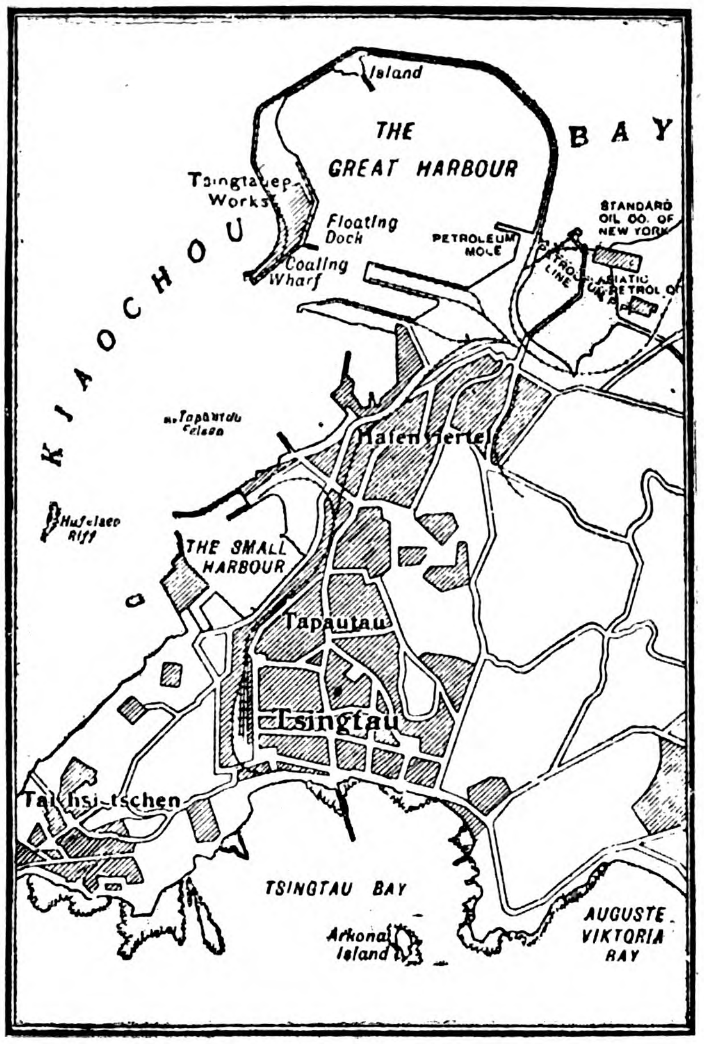
Another View of the Shantung Cement Works

The Tsingtau Harbor Works

NO reference to Tsingtau would be complete without a description of the harbor and its improvements to date. Kiaochou Bay, a natural land-locked harbor of great size, has been used as a haven for many centuries by the Chinese junks that trade around the east coast. It was found that, both for depth of water and land facilities, that part of the bay on the right-hand entrance from the ocean lent itself most to the building of harbor works. This decided the site of the German town of Tsingtau, although it necessitated a circuitous route for the railway to and from that point.

The small harbor shown on the accompanying plan is a natural haven used for fishing boats and trading junks. Nothing has been done there beyond providing roads along which goods are taken to and from the small craft frequenting the harbor. Hundreds of these picturesque vessels are always lying there, and the trade they bring to the port is considerable. The Japanese have made some improvements to this harbor.

The construction of the great inner harbor, shown on the accompanying plan, was undertaken by the German government in 1899. The width of the entrance is 280 m., and the minimum depth of water 10 m. On the right is the commercial harbor with three moles, two of which are 550 m. long and one 750 m. There is also an end berthing space of 100 m., making a total of 1,950 m. The mean depth of water alongside is 9.50 m. The naval harbor works are on the left of the entrance. There was a small island here, which was made up and built around so that it forms a large and convenient site for the workshops and stores. The old German machine shops here have been dismantled. The railway line is brought around to this point as well, and the bank made by the railway formation forms a breakwater which completely encloses the harbor. In making this, advantage was taken of a natural half-circle of rocks and small islands with water space intervening, so that it was not much more expensive than a land embankment.



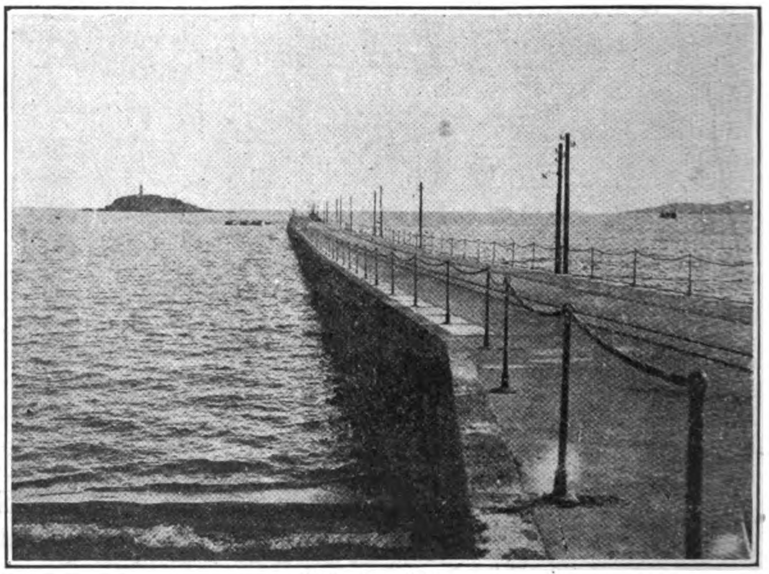
Plan of Tsingtau Harbor

The naval wharfage presents a front 1,000 m. long. Here there is a depth of 10.50 m. of water. There was a good deal of dredging done to obtain this, but once cleared it was found that little or no silting took place, so that the cost of harbor maintenance in this respect is small. The tidal rise is 2.60 m.

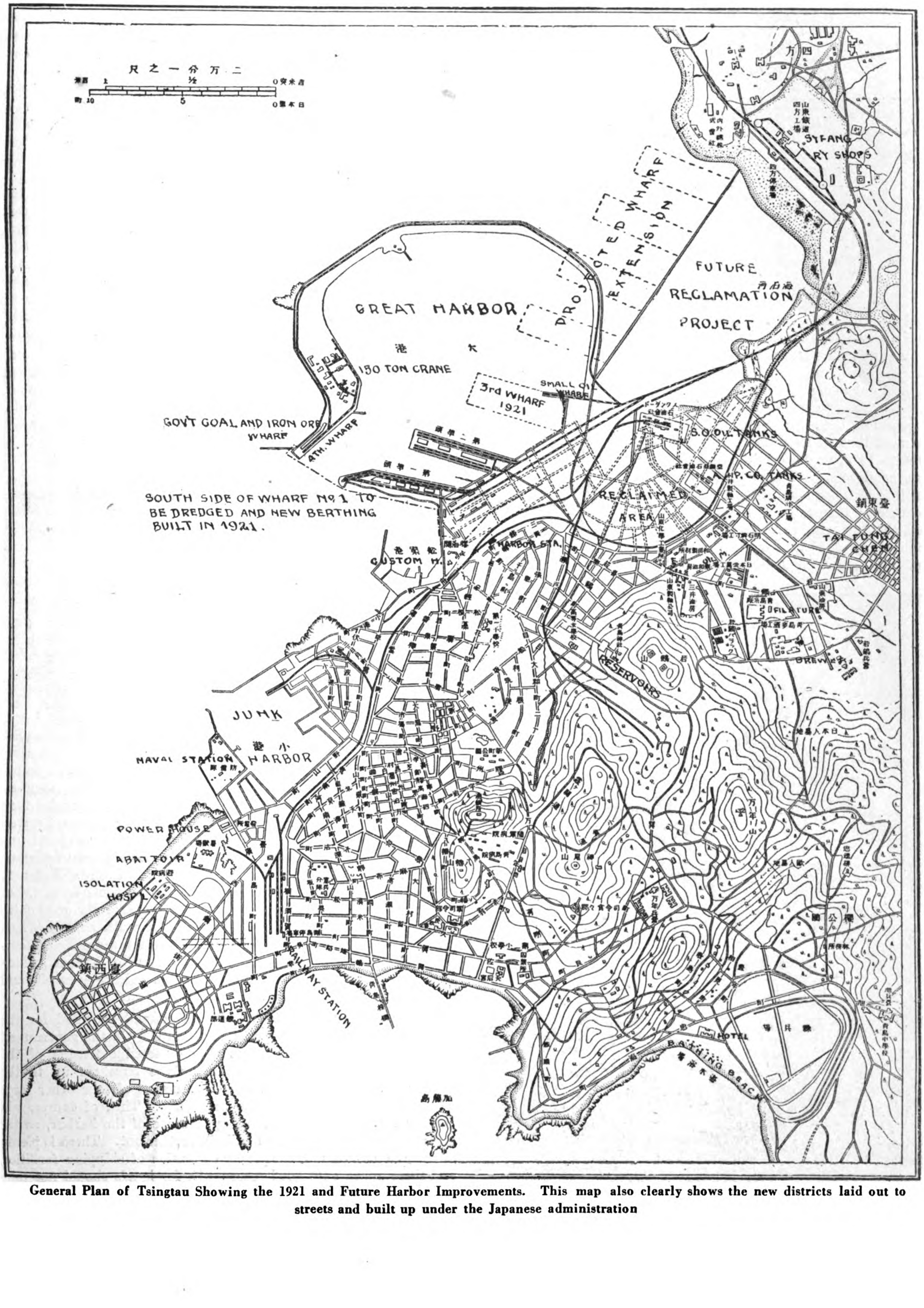
Fig. 2 shows the construction of the wharfage and piers. The walls rest on wooden piles driven diagonally and braced together. These are rammed between with sand filling from the solid bottom to the top to protect them from the attack of marine worms, and also to prevent rot from air and water contact. The outside piles are of ferro-concrete, standing at a slight angle. They are close together, and form a fender for the protection of the wooden piles on which the concrete and masonry structure rests.

No graving docks have been built. The floating dry dock of 16,000 tons displacement used by the Germans, was sent to Japan

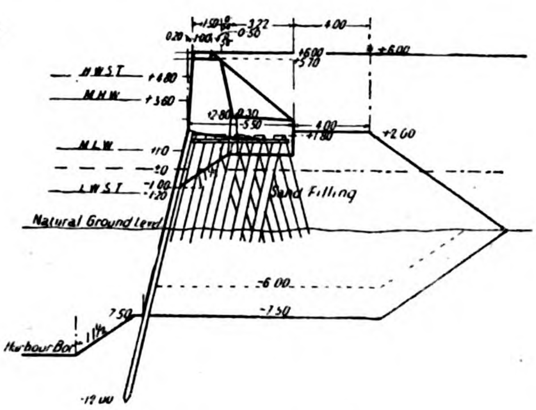
No. 2 Wharf, Showing Railway Connection



Tsingtau Jetty



General Plan of Tsingtau Showing the 1921 and Future Harbor Improvements. This map also clearly shows the new districts laid out to streets and built up under the Japanese administration

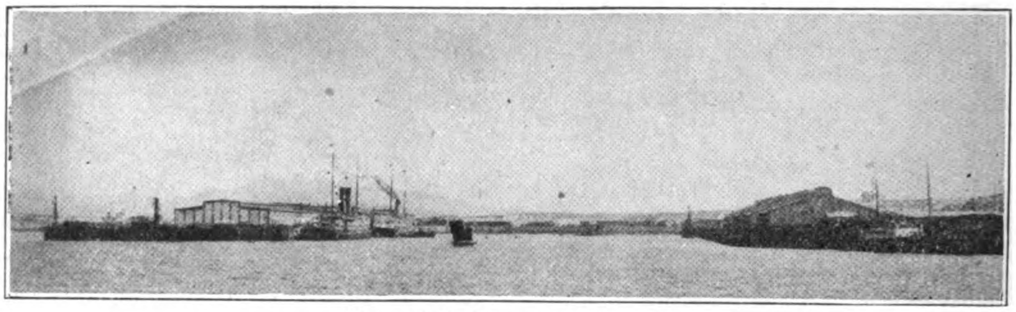


Wharf Construction, Tsingtau

shortly after the capture of the port. At both harbors, loading and unloading direct between railway trucks and vessels can be done. All the materials for the Shantung railway, and also for the northern section of the Tien-tsin-Pukow Railway, were landed at Tsingtau end.

As explained elsewhere, much of the dissatisfaction of foreigners with the Japanese control of the port, has centered around their management of the wharves ; which, it is contended, permitted them to discriminate in favor of their own shipping in the matter of immediate berthing and unloading. It has been difficult at this late date to get at the inside of facts surrounding these incidents, and it may be assumed that under military control from 1914 to 1919, or during the progress of the war, conditions in Tsingtau did not differ much from those found in other belligerent countries. There seems to be little doubt that the Japanese were very strict in the application of their war-time regulations, and at times Japanese vessels had the preference in berthing and unloading. However, under any military control, with an army to be fed and supplied in the background, there are always plenty of justifiable excuses for giving preferential treatment to ships carrying national cargo.

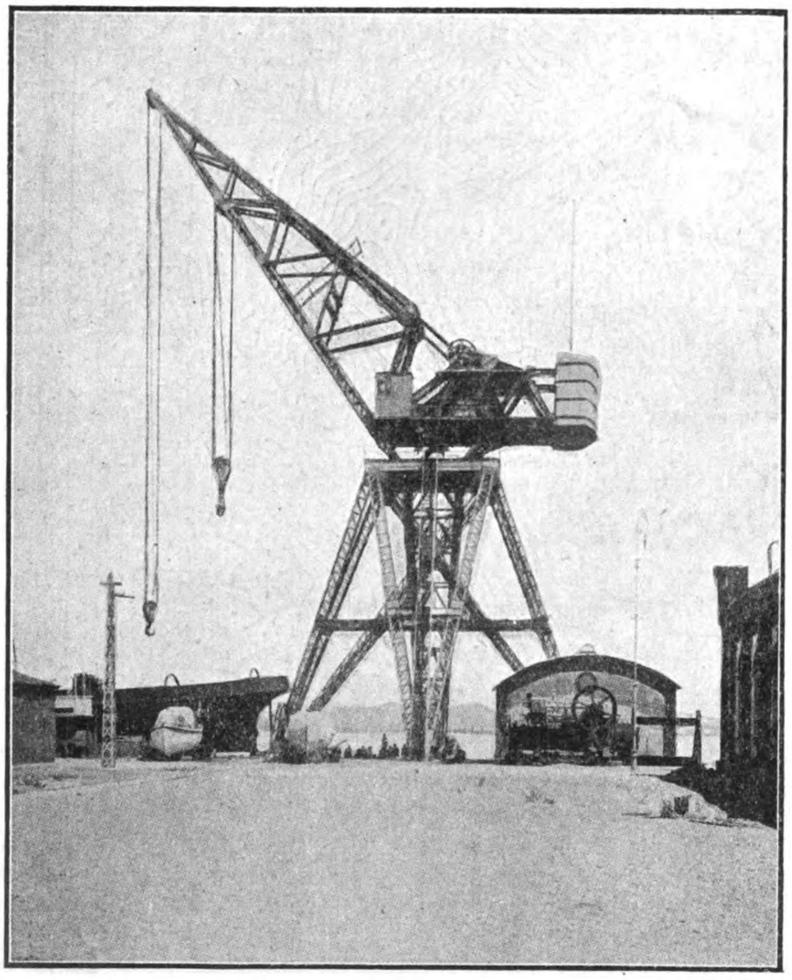
The facilities of the port have been taxed heavily to take care of the rapidly increasing trade and tonnage. The total amount of merchandise passing through the port jumped from 355,556 tons in 1915, valued at Taels 23,137,160 to 1,182,125 tons valued at Taels 67,376,324 in 1919. The total number of vessels entering and clearing from the port increased from 1,178, with a tonnage of 2,175,-202 in 1915, to 2,722, with a tonnage of 2,274,956, in 1919. The volume of merchandise more than trebled in five years with a very slight increase in the total tonnage of vessels entering and clearing during the same period. This slight increase could not materially tax the capacity of the wharves, but placed a strain on the warehouse and transportation facilities. The number of Japanese vessels which entered the port in 1917, was 643, cleared 637, with a total entrance and clearance tonnage of 1,116,608. In 1919, this number had increased to 2,331 vessels with a total tonnage of 1,553,565. The only other nation which figures prominently in the shipping returns of the port is Great Britain. Vessels flying the British flag entering and clearing from the port in 1917 numbered 134, with a total tonnage of 319,622. In 1919, this had jumped to a total of entrances and clearances of 214 vessels, aggregating 519,998 tons. Eleven American vessels entered and cleared in 1917 and 29 in 1919.



View of the Tsingtau Wharves

The volume of trade and the prosperity of the port is increasing rapidly. The higher Japanese authorities express themselves as being extremely anxious to afford equitable treatment to vessels of all nations, and add, that had the complaints about their alleged "inefficiency and discrimination" been brought before their notice, there would have been no necessity for diplomatic correspondence. However much they may regret the incidents and ensuing explanations, they are apparently determined to obviate, as far as possible, any just complaints in the future. Not only are the railway and harbor authorities alive to the situation, but the government is taking no further chances of its good faith being placed in question. To this end, the south side of Wharf No. 1 will be dredged and completed for berthing during the current year, and work will be started on the new No. 3 Wharf, which in the past, has been a small affair for the unloading of oils and other inflammable materials.

The Japanese have looked far ahead and provided for the proper development of the port and wharves. On the government engineer's maps, there appears the projected extension of the reclamation area which will complete the foreshore up to the Syfang Railway Shops, and the construction of four other large wharves, similar in size to the first three. This, of course, will call for a radical change in the appearance of the harbor, as the mole will have to be broken and built further out. There is plenty of room in Tsingtau for the proper expansion of shipping facilities, and there appears no good reason why foreigners should not take advantage of the opportunities offered to participate in this development.



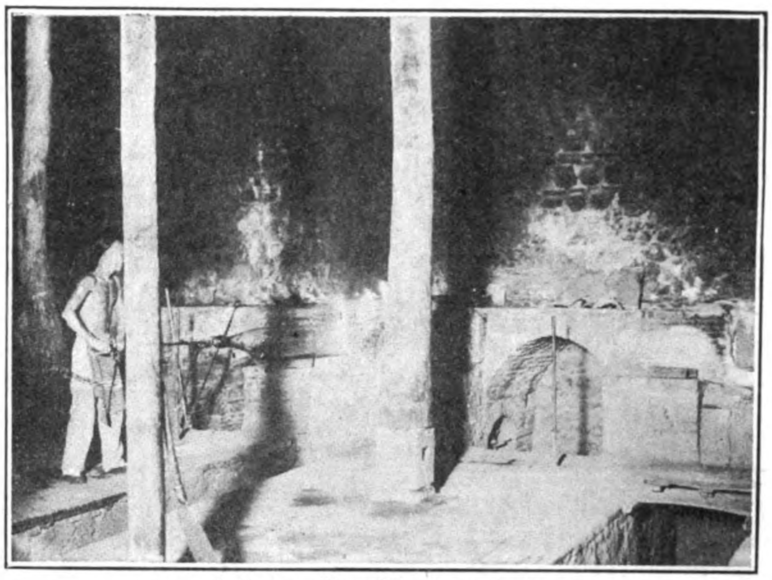
150-TON ELECTRIC CRANE

The was damaged by the Germans, but has been repaired and operated by electricity from the municipal power plant. It is now in operation.

Industries at Poshan

POSHAN has been celebrated for centuries for its glass works, and, according to the *China Advertiser*, the leading factory will be financed and directed by Americans. The paper adds, "It must be remembered that the Company, which is the property of the financial department at Peking, was mortgaged to the Bank of China for a sum of half a million dollars. In 1916, the factory was occupied by the revolutionary leader, Wu Ta-chow, who sold it to a certain Japanese. Although a contract was drawn up, Mr. Hayashi, the then Japanese Consul at Tsinan, advised the Japanese concerned to cancel the negotiation, in view of the possibility of the deal leading to a complicated dispute between China and Japan later on. Afterwards, experts examined the works at different occasions, but all united in the opinion that the machinery being antiquated, nothing could be done unless it is replaced by modern machines, and so the factory was left untouched. According to the report, the American gentleman interested not only agreed to pay off the old debt to the Bank of China, but decided to run the works under Sino-American joint corporation, capitalised at 5 million dollars, new machinery being installed in January next.

It has been impossible to corroborate this report on the ground in Shantung. Whenever foreign capitalists are reported to be in negotiation with Chinese in Shantung, the native press jumps to the conclusion that it must be American. The following is a list of the most important Chinese industries in Poshan.



A Native Glass Works at Poshan

Poshan Potteries

Number of pottery-makers—about 60 families (in Poshan and vicinity). Capital used for:

4 Animals	Mex.	$200
1 Clay-Mortar	,,	$20
1 Kiln	,,	$300/500

Japanese-maker (*a*) Nikka Kungyo Kabushiki Kaisha (Sino-Japanese Pottery Factory).

Erected—1916
Number of Kilns—6
Capital—Y.200,000

Manufactures of drain-pipe, bricks and other articles of clay.

(*b*) San Yeki Koshi (Japanese).

Erected—1915
Capital—Mex. $30,000
Manufactures—lime, drain-pipes, bricks, and other articles

Chinese Potter at Work, Poshan

Poshan Glass Factory

Founded—before the Ming Dynasty
Number of glass makers—

Plate-glass	8 families
Bar—glass	40 ,,
Glass—articles	50 ,,

Poshan Poli Kung-Su (Poshan Glass Manufacturing Co.)—Chinese

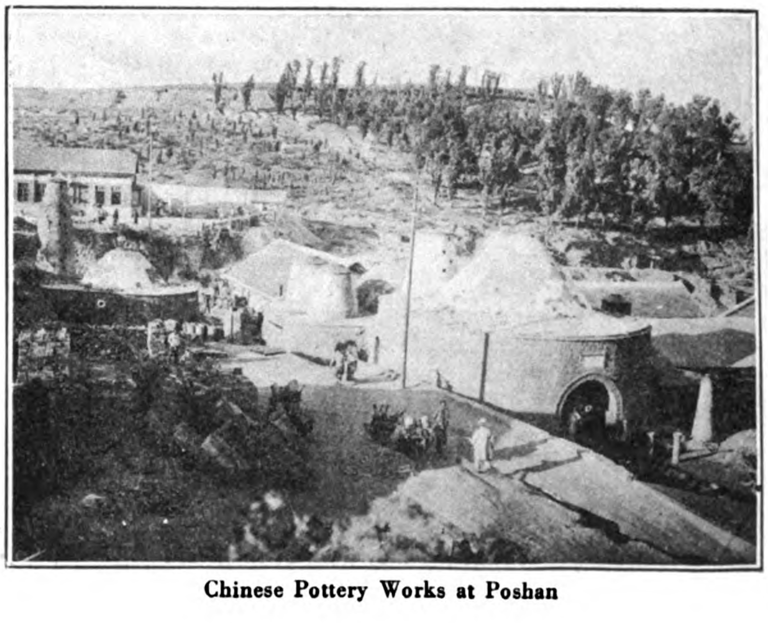
Erected—1904
Capital—Tls. 150,000 (afterwards increased to Tls. 1,000,000)
Closed—1911 (on account of bad quality of the articles)
Machinery—German make
Other plate-glass makers—8
Number of workmen employed—about 110
Quantity of the plate made—about 100 cases

Poshan Lime Kilns

Number of makers—about 70
,, ,, kilns—about 70
Price—60/70 silver yen (per 15 tons)

Poshan Color Works

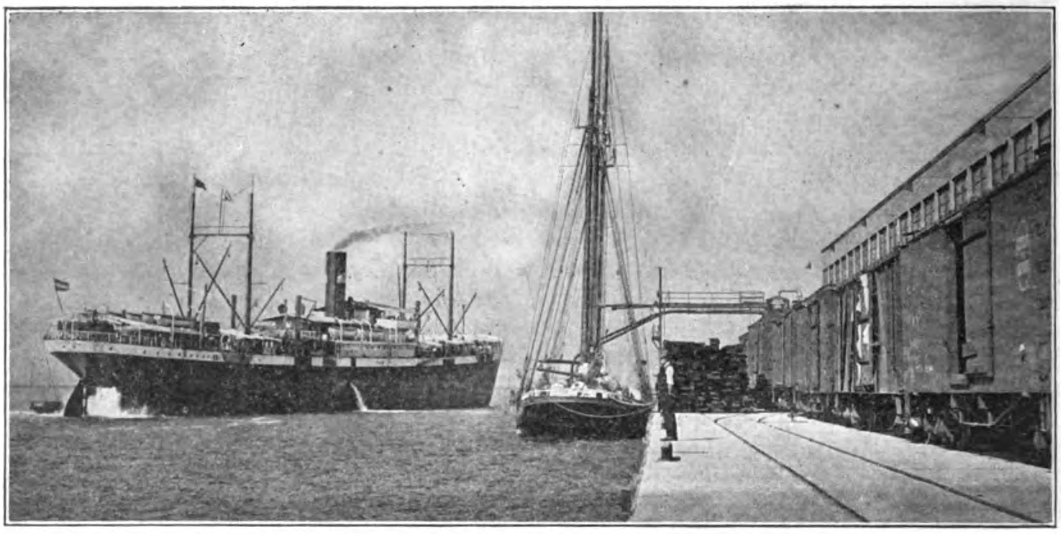
Quantity—10,000/20,000 chin (per day)



Chinese Pottery Works at Poshan

The Parr Terminal at Oakland, California

By William C. Rea



View of The Parr Terminal—Showing where Rail and Water meet at Oakland, California

FOR the first time in its history, San Francisco Bay possesses a point on the mainland side where deep-water vessels may unload their cargoes directly into the cars of the principal trans-continental lines and thereupon load cargoes easily assembled by rail for their return trips.

This is the recently developed Parr Terminal on the Oakland western waterfront, where permanent railway tracks have been extended to connect with the Santa Fe, Western Pacific and Southern Pacific systems. The principal wharf is 1,500 feet in length, raised four feet to the grade of the adjacent wharf of the Albers Milling Company.

An invitation to Far Eastern shippers to use this new terminal has been extended through various civic and commercial organizations by Fred D. Parr, president of the new enterprise. It is Mr. Parr's belief that much freight consigned to Californian and other North and South American points from the Orient, can be economically handled from this rail and water terminal on the mainland.

At the Parr Terminal a cargo shed or slip-head house, 120 by 500 feet, is already erected upon the new apron. This provides not only for coastwise and river steamers, but is entirely suitable for trans-Atlantic or trans-Pacific ships.

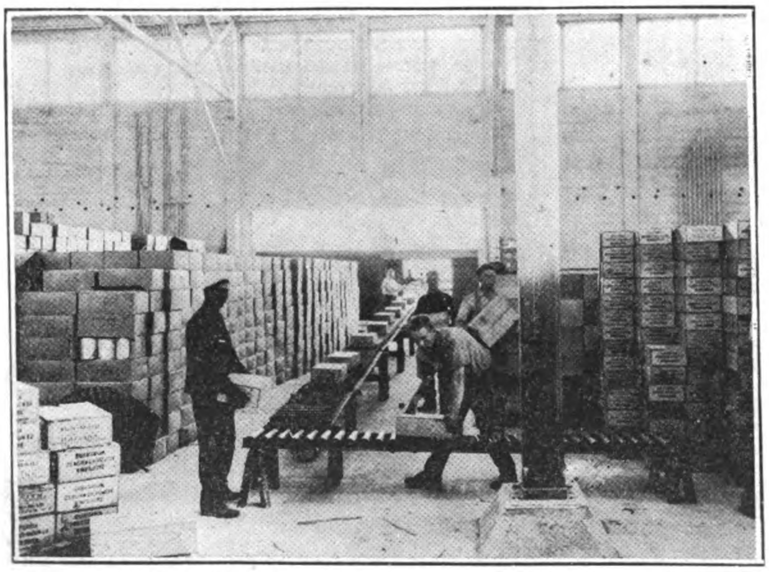
The ultimate program of development by the Parr Terminal Company on present holdings includes the provision for two great ocean piers, modelled upon the exceptionally successful Port Commission Ocean Piers at Seattle, which in turn were adapted from designs of piers at Manchester, England.

The Parr Terminal was recently formally opened when more than one thousand members of the Oakland Chamber of Commerce city and county officials and prominent city officials were the guests of the company, at a luncheon and reception in the main warehouse.

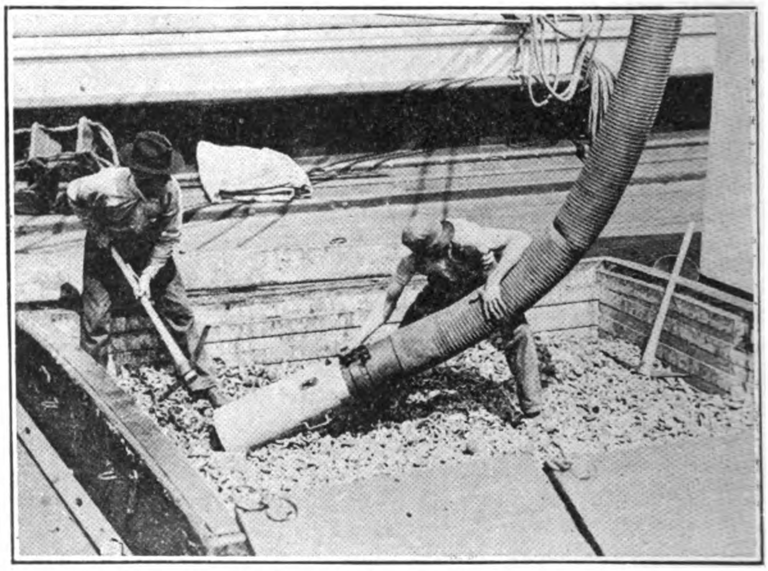
The natural gravitation of commerce has already been proven with this Oakland terminal, obviating the necessity of transhipping freight across San Francisco bay to main rail heads after it has been unloaded at San Francisco piers. The Parr Terminal has proven itself the natural "break cargo" point, where the sea route ends, and the trunk railways commence their trans-continental haul.

The terminal has just been designated as the principal San Francisco bay port of call by two Atlantic steamship lines, by a chain of United States Navy supply ships ; it is the lumber discharging and loading depot for certain Pacific Coast lines ; big vessels from the Orient have berthed there and thousands of tons of copra from the holds of South Sea Island schooners has been transferred from ship to cars by the pneumatic vaccum system.

Mr. T. J. Wade, general freight agent and Pacific Coast representative of the Atlantic-Gulf and Pacific Steamship Line has just completed arrangements with the Parr Terminal, whereby the line



How Gravity is made to work at Oakland's New Model Terminal



Unloading Philippine Copra by pneumatic device at Parr Terminal, Oakland, California

he represents will have vessels call at the Oakland western waterfront on a regular schedule every two weeks. This was the first Atlantic seaboard line to name Oakland as a regular port of call. The vessels also call at Baltimore, Philadelphia, Mobile, Los Angeles and San Francisco. The first steamer of this line to call at Oakland was the Cape Romaine, October 20 last with a general cargo from the Atlantic Coast. The steamer loaded a return cargo assembled at the terminal. Freight is continually assembled from all points for the steamers of this and other lines.

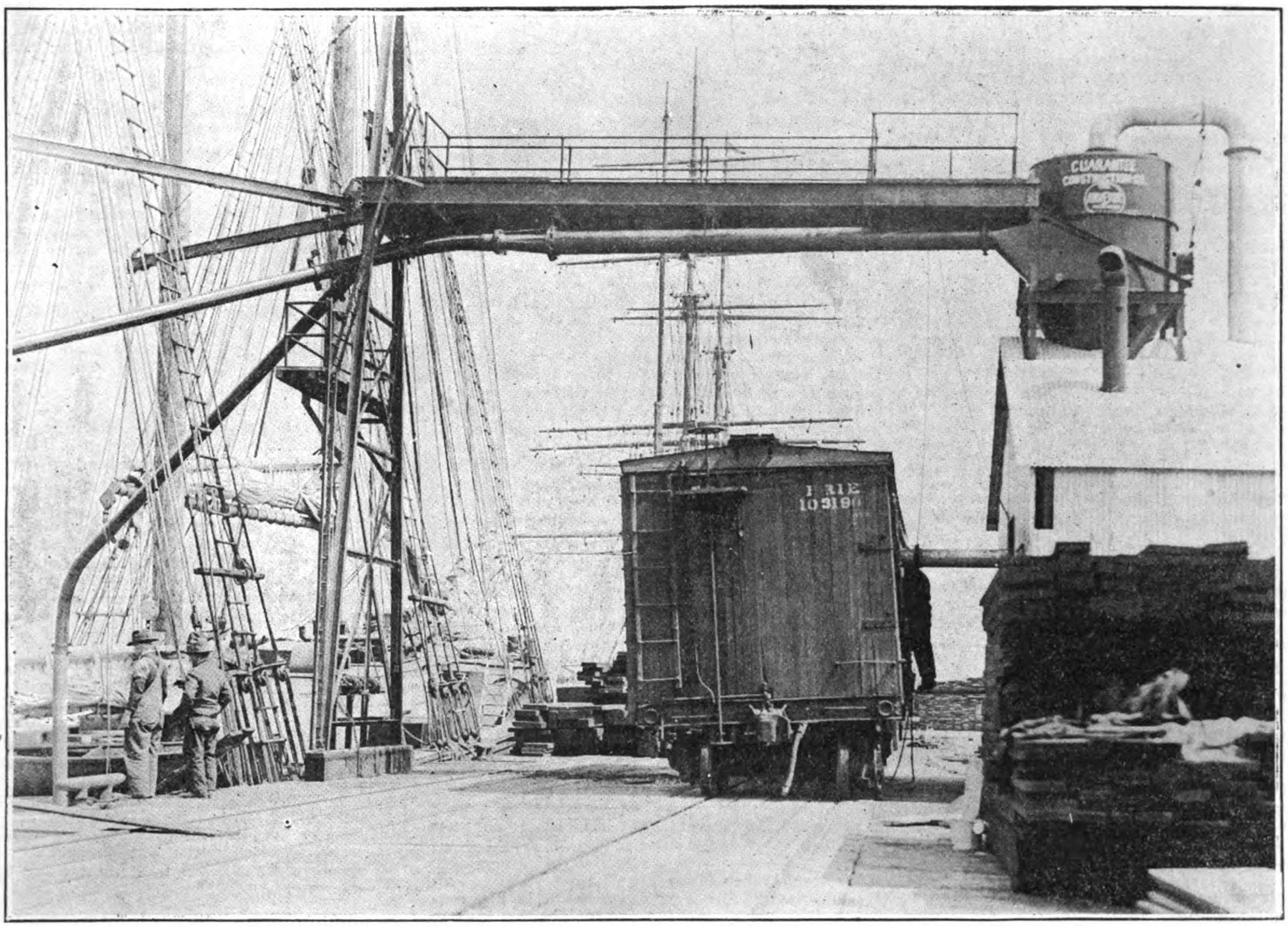
The Tjitoreum, Java-Pacific freighter of 12,000 tons displacement, is another big vessel recently docking at the Parr wharves. After taking aboard a consignment of lumber, the steamer proceeded to Seattle where she completed the loading of her cargo for Asiatic ports.

out of the hold of the vessel and deposited in cars on the wharf waiting to hurry the precious material to the manufacturers.

An energetic campaign is being conducted by the Parr interests to secure tonnage-producing tenants for their industrial blocks. Provision is being made for long term storage and distribution of Philippine and other Oriental vegetable oils with requisite pipe lines, heating systems, electric pumps and working tanks, as well as providing facilities for storing hemp, rubber, pineapples, sugar, coal, cotton, structural and railway steels, teakwood and other timbers, heavy machinery and so on.

Mr. R. S. McElwee, of the department of commerce, author of the text book, "Ports and Harbor Facilities," recently said of the Parr Terminal at Oakland.

"This is an exceptionally complete and modern layout, according to our latest experience and thought in port development. Altogether your plan fulfills all the points of cardinal importance and such a terminal will be nothing short of epoch making."



Pneumatic stevedoring device, unloading Copra from hold of vessel into awaiting freight car.

A new record for copra shipment through Oakland was made is one week recently. Six sailing vessels were at one time unloading 4,795 tons of copra from the South Sea Islands directly on to the cars for shipment to refineries across the country. At the Parr wharves the schooner *Inca* unloaded 1,190 tons with the new vaccum device depositing the copra into waiting cars on the docks. The other vessels discharging were: schooner *Forester,* 708 tons; schooner *Repeat,* 400 tons; schooner *Talbot,* 894 tons; schooner *Irwin,* 381 tons; barkentine *Lahina,* 1,222 tons. Unloading a 400-ton cargo of copra in seventeen hours was the record made another week at the Parr Terminal. The three-masted schooner *Zampa* from Suva in the South Seas, berthed at 11 a.m. one Thursday. At 4.00 a.m. Friday, the last bit of copra had been sucked

The freighter *Orani* of the European-Pacific Line, was the first of a fleet of sixteen vessels operating between Oakland and European ports, to dock at the Parr Terminal. The *Orani* is a 10,000-ton vessel, one of the largest to enter Oakland harbor. She loaded 10,000 tons of barley, sailing for Hull, England, carrying the largest shipment of barley that ever passed through the Golden Gate.

These barley shipments are being handled for the Williams & Dimond Company, agents for the American-Hawaiian Steamship Company and also agents for the European-Pacific Line.

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

Tientsin-Pukow Railway Congestion.—Congestion is very heavy on the southern end of the Tientsin-Pukow Railway. Hundreds of thousands of tons of stocks are awaiting transportation at the principal stations along the line. The ministry of communications has been requested to send sufficient rolling-stock to clear the goods.—*Chinese Press Report.*

New Link, Canton-Kowloon.—A plan is on foot to build a railway from Waichow to Ping Wu Station of the Canton-Kowloon Railway, a distance of 45 miles, has been passed by the Waiyang chamber of commerce. About $3,000,000 is needed to cover construction.

Japanese Railway Electrification Plans.—The bill for the electrification of the Japanese state railways is to be re-introduced in the Diet by the railway department. The government plans include several hundred miles of new lines.

The Chinese Rolling-Stock Loan.—The loan to be used exclusively for the purchase of rolling-stock for the Peking-Suiyuan, Peking-Hankow, Tientsin-Pukow and Shanghai-Ningpo Railways, signed at Peking, contains the provision that all rolling-stock will be purchased in the open market. The lending banks will appoint experts to examine the cars purchased, and will be afforded facilities for examining them half-yearly, in order to see they are kept in good condition.

New Railway Line, Tzeliutsing, Szechuan.—A European railway engineer has commenced surveying for a short line from Tzeliutsing to Tenchingkuan, a small town at the mouth of the little river that flows through the Szechuan salt area. The salt has always passed down this little stream in barges, but the supply of water is very meagre and it takes the boats a long time to reach Tenchingkuan. The railway line, therefore, is very much needed.

Nationalisation of Nanzing Railway.—The shareholders of the Nanzing Railway have petitioned the government to nationalise the line by purchasing it from the present holders.—*Chinese Exchange.*

Famine Labor for New Chinese Lines.—The proceeds of the railway surtax will be utilized for the construction of the Chefoo-Weihsien and Tsangchow-Chenting Railways with famine labor. These railways have been chosen because they are already surveyed and famine sufferers could be employed on them immediately, but the famine revenues will be utilized solely for manual labor.

A New Chihli Railway.—The Chihli provincial assembly has passed a resolution in favor of the construction of a railway from Tsangchow (Tientsin-Pukow Line) to Shihchiachuang (Peking-Hankow Line), the funds to be raised among the gentry and the merchants of Chihli. The estimated cost of the railway is between six and ten million dollars. Influential men of the province are applying to the government for permission to construct the railway.

Japanese Did Not Object.—The Japanese legation at Peking states that Japan never objected to the construction of the Chefoo-Weihsien Railway, for which the Germans formerly claimed the right to furnish funds in the event of foreign money being required. Japan would doubtless protest in the event of any other foreign money being offered, but so long as the line is being constructed with Chinese money there is no ground for protest. Incidentally, the Chinese thus far do not propose to link up the Chefoo-Weihsien and Shantung lines, which was the condition upon which the Germans based their claim to the preferential right of supplying foreign funds.—*Reuter.*

Tsinpu Railway Nets $3 Million Profit.—The receipts of the Tientsin-Pukow Railway for year 1920 amount to $15,567,000 of which $3 million represent net profit. The Chiaotungpu considers this a splendid record and asks the government to award suitable recognition to the Tsinpu administration.

New Stations on Tientsin-Pukow Railway.—Four new stations have been established on the Tientsin-Pukow Railway line at Lichar-chong, Charmung-shan, Shau-bien-cheng and Tan-tse-kai.

To Train Purchasing Staff.—The Peking government "Gazette" publishes a ministerial order from the ministry of communications to the Peking-Mukden, Peking-Hankow and other railways instructing the directors to each select one or two experienced foreign-educated officials to send to London, New York and other foreign cities to act as disciples to those engineers and technical experts who are acting as advisers to the ministry for the inspection and examination of railway materials purchased abroad. This idea is to train experts for railway services so that in course of time, foreign goods bought from abroad by the various government-controlled railways can be inspected and received by Chinese engineers without the assistance of foreigners. Special regulations have been promulgated by the ministry governing the purchase and inspection of railway materials purchased from foreign factories. It is the intention of the government to gradually unify and consolidate the purchasing system so that materials purchased by one line can be used by another without difference.

Consortium Loan Terms?—A Chinese press report, states that Mr. Yung Kwei, Chinese charge d'affaires at Washington, D.C., in a communication dispatched to the Peking government, reports that at the latest conference held by the New Banking Syndicate, in New York, the following conditions relative to making loans to China were agreed on: (1) The syndicate to superintend the purposes for which the money is spent; (2) mines and railways to form the security; (3) money to be invested in manufacturing and other industrial purposes and not to be used, in any way for military expenditure; (4) money advanced to be limited to 20,000,000 silver dollars until the Republic is unified.

Chinghuachen-Pingyangfu Line.—The *Shunpao* reports: The Peking syndicate is negotiating with the Peking government about a loan to build a railway from Chinghuachen to Pingyangfu via Tsechow and Changping. This is quite a different line from the Chinghuacheng to Menghsien. The amount of the loan will be decided after estimating the total amount of work and materials. The syndicate has sent the experts to Honan and Shansi to estimate the works.

New Railroads, Japan.—The Japanese railway department has given permission for the construction of two private railroads: (1) Shimotsuke Railroad Co., Ltd. and to construct a steam railway between Imaichi-machi and Fujiwara-mura, to Chigi prefecture, a length of 16.65 miles; (2) Onsen Electric Railroad Co., Ltd. to construct an electric railroad between Yamatno-mura and Komatsu-machi, Ishikawa prefecture, a length of 6.08 miles.

Japanese Railway Revenue, 1920.—Notwithstanding the business depression that has been felt since May 1920, the Japanese state railway service has not been badly affected, an increase being seen in the receipts from both passengers and freight. According to an official report, the total number of passengers carried during last year stood at 373,202,414, the receipts therefrom amounting to 203,548,751 yen. The figures show an increase of 58,863,474 in the number of passengers and of 55,032,662 yen in receipts as against the preceding year. The freight carried during the year amounted to 54,468,740 tons, the receipts therefrom reaching 127,609,801 yen. Compared with the preceding year, the receipts indicate an increase of 2,758,067 yen though the amount of freight carried represents a decline of 1,792,237 tons.

Japan's Railway Jubilee.—Under the auspices of the department of railways, a jubilee in commemoration of the opening of railways in Japan will be held in Tokyo in the middle of May.

May Remove Tangshan Station.—Tangshan station on the Peking-Mukden line, in the vicinity of the Tangshan Colliery, is thought to be unsafe. The railway authorities are considering its removal.

New S.N. Rolling-Stock.—The Shanghai-Nanking Railway have purchased 7 locomotives, 80 freight cars and 9 passenger cars from Jardine, Matheson & Co., Ltd., at a total value of more than $1,130,000.

Sleepers for Peking-Suiyuan Railway.—The Peking-Suiyuan Railway has purchased 140,000 sleepers from the Mitsui Bussan Kaisha.

Obstructing Mr. C. C. Wang.—The recently elected board of directors of the Chinese Eastern Railway is, according to advices received from Harbin, finding it difficult to function. The railway is again losing money in considerable quantities, due principally to the dullness in business and the Chinese closing of the Manchuli frontier. Only about 250 freight cars a day are being loaded for hauling on the railway, while a minimum of 350 is, according to estimate, necessary to make the railway support its upkeep. Passenger traffic has not, for some years, ranked as a revenue-producer.

Friction between the Russian and Chinese members of the new board is reported to have already developed. Little initiative is shown by any of the members with the exception of China's most experienced railroad man, C. C. Wang. By his endeavors to push things along, he is said, however, to have incurred the displeasure of the other members of the board, both Chinese and foreign.—*China Press.*

TRAMWAYS

Peking Tramway Proposal.—The Peking government has suggested to the French bankers who are providing funds for the construction of the tramway in Peking that the Chinese government will prefer to raise the sum of $2 million to be partly subscribed by the government and partly by Chinese merchants so as to make a combination of French capital with semi-official Chinese capital. —*Peking Exchange.*

Woosung-Yangtszepoo Line.—In connection with the Woosung port development now under way, it is proposed to carry a line of tramways from the Yangtszepoo terminus along the military road to Woosung, and then to the city of Paoshan, returning viâ Paoshan country to the west of the

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military road, and linking up with the Shanghai tramways on the northern and western boundaries. Mr. Sidney J. Powell is the engineer-in-chief.

ELECTRIC LIGHTING, POWER, ETC.

Electric Enterprises in Japan.—Investigations by the ministry of communications show that, at the end of November last, the number of companies undertaking electric operations throughout Japan stood at 810, with an aggregate capital of 1,272,578,461 yen, the electric power generated by them amounting to 1,361,603 kilowatts. Of this, 1,019,301 kilos are generated by hydraulic power and 342,302 kilos by steam. The following are the details :—

	By Hydraulic power kilos	By Steam kilos
For lighting purposes ...	894,152	191,935
For operating electric trams	1,068	6,475
For lighting and operating trams	128,081	142,892

Electric Plant in Ural District.—A big electric plant has been established in the Verknisetsky factory in the Ural district, which will supply electricity to Ekaterinburg.—*Rosta Agency.*

New Light Company in Nantungchow.—The Nantungchow merchants are planning a King Sing Electric Light Co. at a capital of $25,000, to be divided into 500 shares at $50 each.

TELEPHONES, TELEGRAPHS, CABLES, WIRELESS

Powerful Japanese Wireless Station.—The wireless station which has just been opened at Tomioka is the most powerful in the Orient. It is at present receiving messages direct from New York and other big stations, and experiments in regard to sending have been highly successful.—*Celestial Empire.*

American Wireless for China?—The Federa Wireless Telegraph Co., of San Francisco, signed, on January 8, a contract to erect a powerful main wireless station at Shanghai, with sub-stations at Canton, Shanghai, Peking and Harbin, at a cost of $4,200,000. It will be under joint Chino-American operation, and under the sub-control of the ministry of communications, which will cater for official and public business. After ten years the whole system will revert to China. It is understood that this contract has been protested on the ground of alleged infringement of prior British and Japanese contracts.

Vladivostok-Harbin Wireless.—Wireless communication will soon be established between Vladivostok, Harbin and Habarovsk. The telegraphic office of the Chinese Eastern Railway has announced that all telegrams for transmission will be accepted by him at ordinary rates and transmitted to their respective destinations without any needless formalities.

Chinese Wireless Telephones.—The wireless telephones ordered by the Chinese government from the Marconi Company of London, some time ago, are now being delivered.

Dutch Cable Works.—The Netherlands Gutta-percha Company intends to establish a factory at Sourabaya for the manufacture of cables. The company already has a factory at Singapore.

N. E. I. Cables.—Telegraphic communications are to be established among the islands of the Dutch East Indies by the government of the Netherlands, which placed an order for from 1,500 to 2,000 nautical miles of cable. The gutta percha used in the manufacture of the cables is a product of the islands. A large German freight boat has been temporarily converted into a cable ship to lay the new lines.

New Wireless Bureau, Japan.—The construction of the Haranomachi wireless bureau has just been completed, and is expected to start working this month. The height of the centre pole is 660-ft. and messages will travel as far as San Francisco easily.

New Dairen-Antung Telephone Service.—In recognition of the marked growth of the city of Antung and the desire to establish a telephone connection between Dairen and New Wiju, Seoul, and Fusan, the General Post Office of the Kwantung government has completed a direct telephone line between Dairen and Antung at the cost of about Y.230,000. It is to be opened to public traffic on December 1st. In view of there being a direct Dairen-Changchun line, the telephone network for South Manchuria has thus been brought to a completion. The new line is available also to Port Arthur, Yingkou, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Seupingkai, Changchun, Penchihu, etc., and is constructed with 400-lb. wires instead of 300-lb. wires as in an ordinary case. The Chosen government general, on its side, has finished the Seoul-Pingyang section and has now the Pingyang-New Wiju section under construction. The telephone charge is to be like that between Dairen and Changchun, that is, about Y.1.60 per message.—*The World's Salesman.*

PUBLIC WORKS

Reclamation Works, Japan.—Extensive reclamation works at Inohana lake, Shiznoka prefecture, are to be commenced in April or May. The expense is estimated at Y. 2,500,000.

"Dr. Sun's" Park.—The *Shunpao* says it is decided to lay out Kwanyinshan as a park and it will be called Chungshan Park by using the pseudonym of Dr. Sun Yat-sen to commemorate him.

PORT WORKS, HARBORS AND DOCKS

The Proposed Hulutao Harbor.—With regard to the construction of the Hulutao harbor works,

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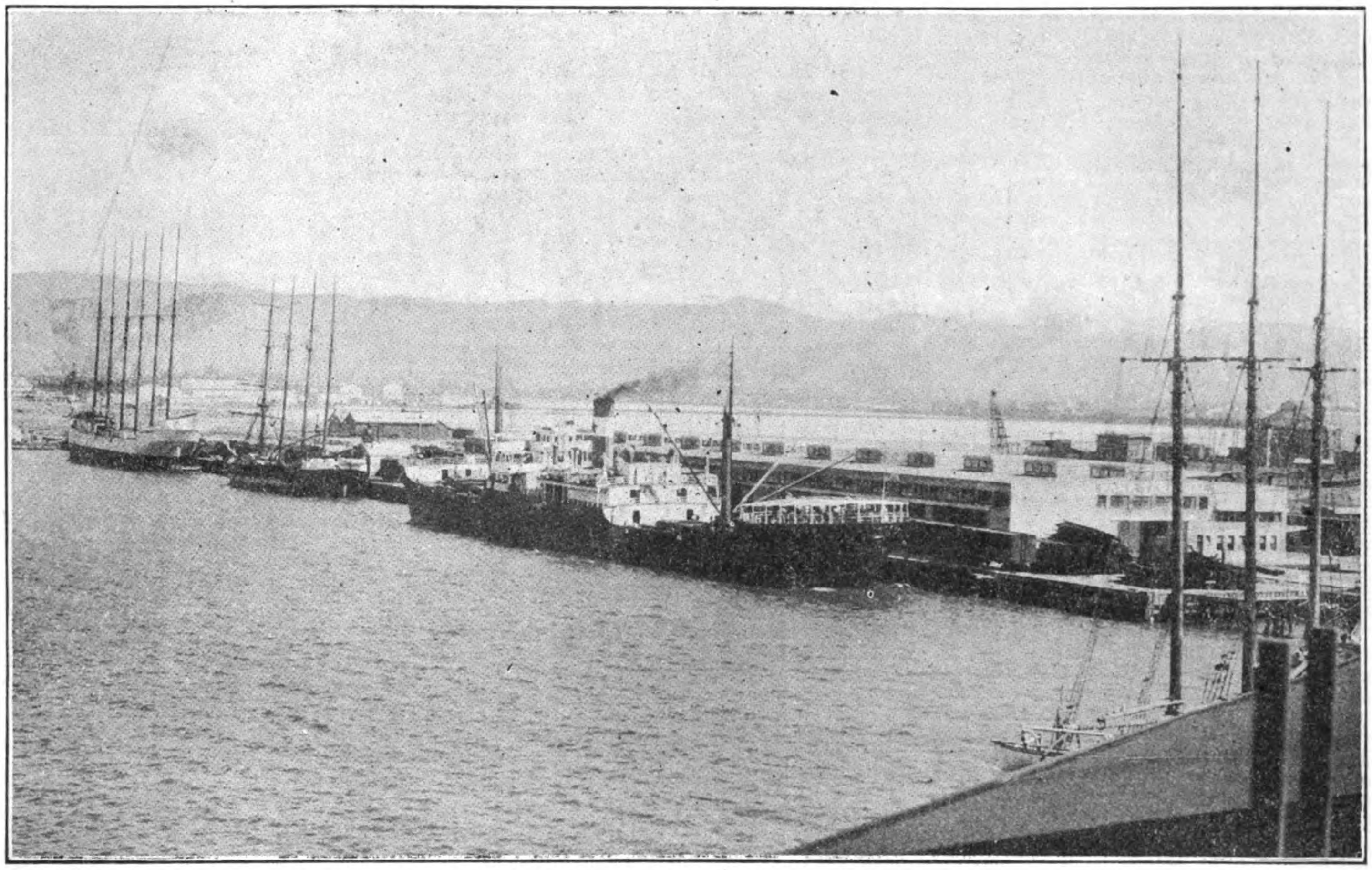

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some influential Chinese commercial interests in Manchuria have petitioned General Chang Tso-lin asking whether they be permitted to raise funds for the purpose on behalf of the Chinese government because it has been decided not to use foreign money. The idea of the Chinese merchants is to build an up-to-date harbor and other works in Hulutao for competing with Dairen and Yingkow in the exportation of Manchurian products; but General Chang has referred them to the Peking authorities. The construction cost is estimated at $8,200,000. It was proposed to have this capital subscribed in equal shares between the government and the merchants. The scheme is shelved for the present because neither the merchants nor the government can raise the funds.

Woosung Port Development.—The Woosung commercial port bureau, with head offices at Woosung and a branch office in Shanghai, will be formally opened on February 12. The promoters, a strong Chinese syndicate, have appointed Mr. H. von Heidenstam, the chief engineer of the Whangpoo conservancy board, adviser to the new bureau, and Mr. Sydney J. Powell, engineer-in-chief. Among other important undertakings, the syndicate has in view the construction of a line of tramways.

Chefoo Harbor.—The improvement of Chefoo harbor has been continued throughout 1920. Work on the breakwater has not been completed, and a total length of 1,700-ft. of parapet wall has been built. Work on the mole is going on steadily.

New General Post Office and Hospital for Singapore.—The Singapore government plan to commence work within the next few months on the buildings of the new general post office and new general hospital.

Repairs to the Grand Canal.—The Chinese government has organized a bureau to take charge of the repairs to the Grand Canal, which has become congested with mud and débris. Plans of the work were discussed and decided upon at the general meeting of this bureau in December. The amount required for the first year's work will be $918,000, for which the plans have already been signed. The bureau has in hand a sum of $425,000, and the deficit is to be secured by levying a surcharge of 20 per cent. on goods passing through the native customs in Kiangsu province.

New Floating Dock for Sourabaya.—A message from Rotterdam states that tugs have left that port towing a floating dock bound for Sourabaya. The dock is 94 metres long and 23 metres broad.

Large Dock for Pootung.—It is reported that a recently-established engineering firm in Shanghai intend to erect a large dock at Pootung in the near future.

Experts Invited for Shanghai Port Conference.—The Whangpoo conservancy has decided to request the countries which are members of the consultative board—viz., Great Britain, America, France, Japan and the Netherlands—to nominate a consulting engineer, who is a specialist in harbor and river work, to attend a conference at Shanghai on October 15 on the question of developing the port of Shanghai, (1) on the basis of the approaches and draught limit remaining as at present, and (2) for the probable maximum draught of Pacific ships.—*Reuter.*

Two Delegates Visit America.—The Nantungchow conservancy board and the Grand Canal conservancy board, Kiangsu, have each sent a delegate to America to investigate engineering works in connection with the work of the boards. The former board is represented by Mr. Sung Tah-an, and the latter by Mr. Sen Pao-duen.

BRIDGES

Tokio to Build Thousand Bridges.—The Municipal authorities of Tokyo have decided to carry out the reconstruction of 1,000 bridges in the city during 1921. 300 are wooden bridges and will be replaced by modern iron-framed bridges. The total expenditure will be Y.1,400,000.

The Suez Canal Bridge.—The bridge traversing the Suez Canal which was erected during the war will shortly be demolished, and will be replaced by a tunnel.—*Reuter.*

WATERWORKS

Singapore Waterworks to be Improved.—The Singapore municipality are to spend $21,500,000 on the improvement of the water supply of that city by constructing new pumping stations, reservoirs and extra mains. It is estimated that the work will cover a period of seven years.

BUILDINGS

Up-to-date Hospital, Straits Settlements.—An up-to-date hospital is to be erected in the Straits Settlements somewhere at the junction of Bukit China and Lorong Panjang. A laboratory on modern lines will be attached to it and the government pathologist will be stationed in Malacca.

New Hospitals for Chita.—An hospital for invalids is to be erected at Chita, also a home for aged people.

Commercial and Industrial Hall, Japan.—The construction of the commercial and industrial encouragement hall at Tokyo, is half completed. The cost is estimated at Yen 1,000,000. The chemical hall is expected to be completed in March, and the sample, engineering and industrial halls are to be completed in November. The formal opening will take place some time in November.

Tenement House, Japan.—The social department has decided to construct a three-storied iron concrete building, as tenement house for laborers. The building is to cost Y. 150,000.

Two New Schools, Tokyo.—The plans have been passed for the construction of two middle schools, Tokyo, at a cost of Y. 600,000 each.

Industrial School and Hostel for Hindu Widows.—Bahadur Lala Ganga Ram, a wealthy resident of Lahore, has offered in trust to the Punjab government, property at Lahore, for the establishment of a normal and industrial school and hostel for Hindu widows, and a first-class secondary school for girls. The hostel is planned to accommodate 80 boarders at the outset. The Punjab government has gratefully accepted the offer.

French Commercial School in Shanghai.—A commercial school is to be established at Shanghai under the joint direction of the French and Chinese governments. The French government will contribute £3,000 towards the cost of erection, and the two governments have undertaken to share the running expenses, which are calculated at £13,000 per annum.

Japanese University for Shanghai.—Japanese in Shanghai are contemplating the construction of a university for Chinese under the directorship of Dr. Ariga, one-time legal adviser to the republic.

National Shrine, Japan.—It has been decided to construct the Yamato-no-Hime shrine at Yamada city. An engineer has been appointed by the government to investigate. The shrine is to occupy an area of 30,000 *tsubo.*

MACHINERY

Machinery for Takashima Coal Mine, Nagasaki.—The Mitsubishi Mining Co. plans to burn power coal at the Takashima coal mine, Nagasaki, at the rate of about 200 tons per day. Machinery for this purpose has been ordered from the United States.

MINES, MINERALS AND METALS

Anglo-Chinese Mining, Sinkiang.—The tuchun of Sinkiang, General Yang Tseng-hsin, has telegraphed that the local gentry intended to inau-

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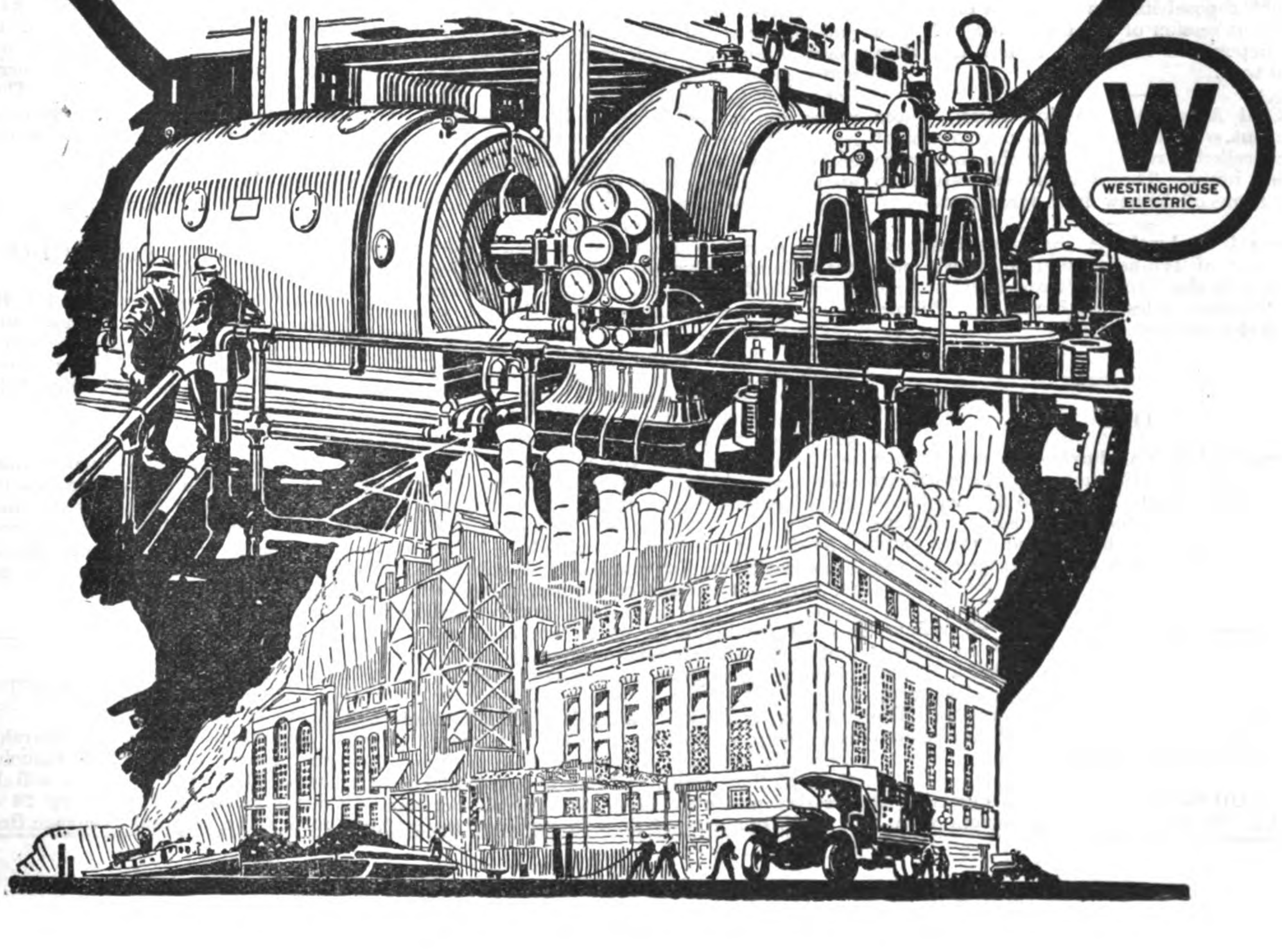

gurate an Anglo-Chinese Mining Syndicate to operate the oil fields in that province.

Mining in Shansi.—During the course of the last few weeks, vernacular papers in Peking and Tientsin printed alarming reports charging General Yen Hsi-shan, military governor and concurrent civil governor of Shansi for the alleged sale of valuable mining concessions to certain British and American merchants for his self-enrichment, etc. Now governor Yen has sent an official despatch to the ministry of agriculture and commerce reporting the signing of a draft agreement with the Peking syndicate for working the coal and iron mines in Tatung and other districts within that prefecture by joint Chinese and British capital and administration. According to the despatch, the idea of Sino-British co-operation for the development of the valuable mines in Tatung prefecture of Shansi was first brought to the notice of the native gentry and the chamber of commerce of Tatung and not suggested by the governor so that in accordance with the retrocession agreement with the Peking syndicate signed in the year of 1898 when the said British company restored its mining rights to the people of Shansi by the payment of one million and half dollars in specie, the "Fu-kung-ssu" was invited to co-operate with the natives this time without payment of any commission or any loans to Shansi at all. The whole business is strictly commercial and there is nothing underneath the table. Previous to its presentation to the ministry of agriculture and commerce for final approval by the civil governor, the draft agreement was duly sent to the provincial assembly in Taiyuan for concurrence.

New Mining Company.—A mining company under Chinese management and control, with a capital of $10,000, was formed by some Chinese merchants in Tachienlu, Szechuan, to operate a mica mine near Tanpashun, north of Tachienlu. Two hundred shares of $50 each have been issued and subscribed and the company is planning to connect with foreign firms either in Shanghai or in Chunking

COAL

Coal Mines in Kabafuto.—The government of Kabafuto (Saghalien) has proposed to the board of colonies in Tokio to establish a semi-official company under the style of Kabafuto Kogyo Kaisha (Kabafuto Mining Company) with a capital of Y. 80,000,000, to operate coal mines in that island. The proposal may probably be placed before the present session of the Imperial Diet. The total coal deposit in Kabafuto is not less than 500,000,000 tons.

Cassel Coal Agreement.—Major Cassel, whose coal agreement with the late Canton government has been cancelled, is re-negotiating the concession on modified terms. The government refuse to disclose the terms of the new draft agreement.

New Mines in Anhwei.—A coal mine has been discovered west of Tzu-hsien, in the Anhwei province, situated on the Tientsin Pukow Railway line, about thirty-three miles north-west of Pukow. The metal is close to the surface.

OIL

Petroleum Find in Manchuria.—Petroleum has been discovered in the Hinsun mountain, northern Manchuria. The oil is to be worked by merchants under the supervision of the government. Machinery is being ordered from the United States, and American technologists are being engaged for the work.

New Japanese Oil Refinery.—An oil refinery which was in course of construction in Niitsumachi, Niigata prefecture, by the Teikoku Sekiyu Kaisha (the Imperial Petroleum Co.) has been completed and the factory is now in operation. The refinery is reported to be capable of turning out from 1,200 to 1,500 *koku* of petroleum a day.

Philippine Oil Tanks.—The A.P.C. is erecting at Cebu (P. I.), two fuel-oil tank-containers with a capacity of about 1,500 tons each, and a large petroleum depôt at the port. They are situated on a reef at the south entrance to the harbor, and are expected to be completed in April, 1921.

New Oil Mill to be Established in Chungming.—The erection of an oil mill in Chungming, capital of $100,000, conducted on modern methods, is being planned by Mr. Sung and other local merchants. Chungming is an island lying right at the mouth of the Yangtze, and the oil is to be made chiefly by pressing the seeds of cotton and beans. The machinery for producing bean-oil has been bought locally, and that for cotton-oil is to be ordered from abroad.

Oil Fields in Chinese Turkestan.—Yang Tsenghsin, the tuchun of the new dominion, wired to the Peking government on the 3rd January that as Kwan Pao-chin, a Chinese merchant of that province, and a British firm have concluded an agreement to establish a company to operate oil fields in the new dominion as a joint enterprise, the board of political affairs of that province will send an official to Peking with the draft agreement to confer with the Peking government about it fully.

INDUSTRIES

Modern Ice Making and Cold Storage Scheme for Kobe.—A scheme is under way for the erection of a modern ice making and cold storage plant in Kobe to be located on the bay front between Kobe and Osaka.

The plant will be of American type used in France by the American Expeditionary Force, having a daily capacity of 300 tons of ice and 1,000 cubic tons of cold storage space.

The installation and operation of the plant will be supervised by Japanese engineers, with the manufacturer's engineer as adviser. Two Japanese engineers are now abroad studying foreign cold-storage methods.

Ice will be supplied to Osaka, Kobe and the intermediate towns. Three tugs of special design have been contracted for to carry ice to Kobe and Osaka. Auto trucks will be used to receive the ice from the tugs and distribute it to retail depots and large consumers. The receptacles used in transporting the ice by tug and auto are the same.

Cranes erected at Kobe and Osaka will lift these receptacles containing two tons of ice from a tug to a truck. The promoters believe that a modern company for supplying ice at reasonable prices and in a convenient way will be financially profitable and serve a social purpose as there is no doubt that many infants and sick people of the poorest class suffer great hardship and often death during the hot season for lack of this commodity. Exorbitant prices and inaccessible supplies handicap the business as it now exists. To overcome these the new company will, in addition to the method outlined above, establish depots at suitable points in all the cities and towns served and from these small carts will traverse all the principal streets at least once a day during the summer season. Well worked out estimates have established the fact that ice can be supplied at prices more than 50 per cent. below those now prevailing and still allow a reasonable profit, reserve, depreciation, etc. The capitalization of the company will be Y.2,000,000, of which three-quarters has been provided by British, American and Japanese interests. It is probable that the remaining one-quarter of the shares will be offered to the public in small denominations, with restrictions on the amount which any one person may hold. The plant will be finished and manufacturing begun during the first half of 1921.

Shells Utilized in Lime Kiln.—A factory has been started in Nantungchow, China's model city, for turning the shells of oysters, clams, etc., which abound in that city, into lime. Limestone is needed for buildings which are constantly being erected, so the authorities have been petitioned to place an embargo on the export of such shells.

Flour Trade of Shanghai.—The flour trade has been very prosperous in China in recent years, especially at Shanghai, where there are now more than 20 flour mills, yielding about 46,000 parcels per day and over 17,000,000 parcels per annum. A large quantity of flour is exported from China every week to England, America and Japan. The total amount exported last year from Shanghai is valued at over $11,000,000.

A Provincial Exhibition to be Held at Nanking.—An exhibition for promoting and improving industrial enterprises is to be held at Nanking on March 1.

Lacquer-Ware Industry.—According to a report by the ministry of agriculture and commerce, at the end of 1919, the total number of factories carrying on the manufacture of lacquer-ware throughout Japan reached 7,789 with 22,835 employees therein, and the value of lacquer-ware turned out during the year mentioned amounted to 24,150,237 yen. Compared with the preceding year the number of factories indicates an increase of 373 and that of employees 167, while the wares manufactured also show a gain of 7,959,492 yen or 49 per cent. To go into further particulars, the value of household furniture and fancy goods turned out totalled 9,298,371 yen, an increase of 2,056,213 yen as against the preceding year, that of table ware amounted to 9,144,254 yen, an increase of 3,004,696 yen, and that of other wares amounted to 5,706,612 yen, also showing a gain of 2,898,583 yen or 103 per cent. The increase is principally accounted for by the abnormal rise in the market price, but there is no denying that the demand is steadily on the increase.

Foreign Business Firms in China.—The number of foreign firms doing business in China, according to the Chinese ministry of commerce, is as follows :—

No. of business firms	Nationality
2	Germany
4	Sweden
5	Austria
8	Spain
12	Norway
19	Italy
20	Belgium
25	Holland
27	Denmark
93	Portugal
171	France
314	U. S. A.
644	Great Britain
1,760	Russia
4,878	Japan
33	other nations

Pacific Commercial Co., will Note.—Mr. Hsu Shi-yin, formerly acting civil governor of Fukien, and some other prominent personages have formed a joint stock company, known as the "Pacific Commercial Company," to carry on trade with different foreign countries. The application for the registration of the company has been duly granted by the ministry of agriculture and commerce.—*Chinese Report.*

FISHERIES

Refrigerating Trawler for Bombay.—To give the Bombay market a more adequate supply of fish, a trawler is being secured, equipped with a refrigerating plant, so that it can remain at sea for several days and still bring fish to harbor in a fresh state.

Fishery, Japan.—Usually there is very little fishing done in the Japan Sea during the winter, but this winter things are more hopeful, and the departments of agriculture and commerce is sending 20 officials under engineer Shimoda, through the Japan Sea to north Karafuto sea, to investigate fishing conditions.

AIRCRAFT

Japanese Airplane Mothership.—The airplane mothership, which will be launched at the Yokohama Dockyard in June, will have 10,000 tons displacement and will carry 24 airplanes and 550 men. The proposal to engage British naval airmen

as instructors has had to be dropped owing to the British authorities not being able to spare the men, but the navy office is considering the engagement of British civilian instructors in their stead.

Airdromes, Japan.—In the coming fiscal year, new aerodromes will be established at the Kure and Maizuru naval ports, in addition to those at Yokosuka and Saseho. It is proposed to increase the naval air corps to 15 during the next three years, and the training of airmen and other preparations are under contemplation.

Kyushu-Shanghai Flight.—The Imperial Aviation Association has decided to carry out a non-stop aerial flight between Kyushu and Shanghai November next. Prior to this, the association will carry out an aviation contest at Susaki about the middle of May.

Big Airplane for Nippon.—A big airplane is to be constructed by the Japanese navy department at Yokosuka at a cost of Y.90,000, 20 British airplane builders doing the supervisory work, according to a report in the Japanese papers. The rights to manufacture the F.-5 type is reported to have been secured from the British government by Japan. One report states that a 900-H.P. engine is to be installed in the machine. Most of the materials for construction are being brought from England.

Reported Chinese Seaplane Contract.—A loan of £400,000 has been secured from a British firm who has concluded a contract with the government for £897,200 for the supply of 105 seaplanes, ready for delivery before end of June next. In payment for the loan and for the contract, the government will issue treasury bonds on the basis of 100 for 92. The contract price also includes the cost for the construction of seaplane depots at Makiang, Kiangyin, Chefoo and Taku. The loan, it is reported, has been paid over to the ministry of navy.—*Chinese Exchange.*

Japan Buys French Planes.—The Japanese authorities have decided, according to the *Yamato*, to order from France five large aeroplanes, at a cost of Y.60,000 each. It is further reported that French instructors will be invited to visit Japan early in April to train Japanese officers in the art of controlling these large aeroplanes.

Planes from Germany.—Seventeen German airplanes allotted to Japan were brought by the N.Y.K. *s.s. Tsuruga Maru*, which arrived at Kobe on January 17.

Tokyo Main Road.—The Tokyo reconstruction section of the home department plans to build a main roadway from the eastern side of Tokyo station as far as Kamejima bridge. The road, according to present plans, is to be 168 feet wide and some 2,784 feet long, something over half a mile. The cost is to be Y.5,300,000, including the expense involved in the purchase of property.

Chapei-Taichong Road.—A road for motor-cars is shortly to be started between Chapei and Taichong. Should it prove successful, the promoters will make further extensions. The initial estimate is $200,000.

New Automobile Road.—The automobile road between Tse-ning and Sechien, two cities in northern Kiangsu about 58 miles south-west of the intersecting point of the Tientsin-Pukow and the Lunghai Railways, was opened to traffic on January 16.

MOTORS

No Sound Motor.—Messrs. Sale & Frazer of Tokyo, have purchased the rights of the no sound motor for Yen 1,000,000. This motor has been recently invented by a Russian, and should be ideal for aeroplanes.

Cars in North China.—There are about 600 motors in Tientsin, China, this year as against 400 last year. A truck line is being established from Peking to Tungchow and from Tungchow about a third of a mile to the Western hills. Other lines are being established from Chinhaishin and from Techow to the interior of Chihli province.

Automobile Communication Between Ito and Atami, Japan.—Some business men of Nuinazumachi are forming a limited company to open automobile communication between Ito and Atami, a distance of 12 miles.

Canton Motor Opportunity.—There will be a motor road from the North Gate of Canton to the district of Tsungfa, some 159 miles, if the proposal of an interested party to run a motor-car service is realized.

Heilungkiang Motor Ban.—The Heilungkiang provincial authorities refuse to permit the French to operate any motor car services between Tsitsihar and Heilungkiang, on the ground that the motor roads built in that province were at the expenses of the Heilungkiang provincial government and therefore could not be utilized for purposes other than postal services carried on by local authorities.

GOVERNMENT FINANCE

China's Financial Condition before the New Year.—As announced by the ministry of finance the Chinese government must pay before Chinese New Year $13,100,000 for the repayment of principal and interest on different loans due on Chinese New Year's eve (February 7), more than $9,700,000 to troops and $4,500,000 for political expenses out of the revenue from five newly contracted loans to an amount of $24,200,000 and the revenue derived from national taxes handed in from various provinces to an amount of more than $4,000,000.—*Shun Pao.*

Chinese Bankers' Petition.—The national federation of banking corporations has petitioned the government to carry out the three resolutions passed at the general meeting of the federation, as the best solution of the present financial trouble. They are as follows: (1) A definite measure should

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JAPAN INDO-CHINA PHILIPPINE ISLANDS NETHERLANDS INDIA SOUTH AMERICA
CHINA SIAM STRAITS SETTLEMENTS INDIA THE LEVANT

be taken as soon as possible for the disbandment of troops of the different provinces within a prescribed length of time; (2) domestic loans should be readjusted. Discredited loan bonds of the 1st and 8th year of the Republic should not be floated any more; (3) the currency system should be consolidated. Bank notes in circulation should be supervised and a system formed regarding their issuance. Regulations governing the minting of silver coins should be drawn up at once, and the minting of copper coins stopped.—*Sin Wan Pao.*

Maritime Customs Revenue for 1920.—The revenue from the maritime customs for 1920, amounted to Hk. Tls. 49,500,000, an increase of Tls. 3,500,000 over 1919. The collections for the principal ports are :—

	HK. Tls.	HK. Tls.	HK. Tls.
Harbin	933,200	933,200	—
Harbin	933,200	a decrease of	36,500
Antung	1,130,500	,,	214,700
Dairen	4,902,700	an increase of	345,800
Tientsin and Chinwangtao	5,496,100	a decrease of	69,700
Kiaochow	1,607,500	,,	59,200
Hankow	3,671,000	,,	548,500
Shanghai	18,833,000	an increase of	4,543,300
Swatow	1,109,900	,,	60,200
Canton	2,542,300	,,	70,400

All foreign and indemnity obligations secured on the customs revenue, including the service of the reorganization loan, have been fully met and a sum of Sh. Tls.23,150,000 has been handed over to the Chinese government.

Terms of Famine Loan.—The terms of the $4 million famine loan which, after protracted negotiations, was signed on January 19, are as follows :—(1) The amount of the loan will be for $4 million, Chinese currency; (2) interest will be paid on the basis of 8 per cent. per annum; (3) the loan funds will be paid on the basis of 995 for 1,000; (4) security for the loan will be in the form of the surtax charged by the Customs and any deficit will be made good by an appropriation from the Customs surplus; (5) the uses of the loan will be exclusively confined to the relief of the famine in China; (6) repayment of the loan will be effected within one year approximately; (7) the loan of $4 million will be furnished in four equal shares of $1 million each by the Yokohama Specie Bank, the Hongkong and Shanghai Banking Corporation, the Banque de l'Indo-Chine and the International Banking Corporation; (8) interest will be paid together with the payment of the final instalment of the principal; (9) the disbursement of the funds will be subject to the approval of the supervising committee; (10) the surtax collected by the Customs will be deposited monthly by the commissioner of Customs of Shanghai according to the stipulated proportions in the four creditor banks.

China's Salt Revenue.—The revenue from the salt gabelle for 1920 is reported to have amounted to $90,000,000 or about a 10 per cent. increase over that of the previous year.

Canton Asked Bank of Formosa for Loan?—The Canton military government made overtures to the Bank of Formosa toward the close of the year asking for a Y.1,000,000 loan. The government is suffering from financial difficulties and it is thought the loan is intended to defray expenses. The bank hesitated to comply with the request, fearing, if furnished, it might be considered a political loan and provoke criticism as such in certain sections. In consequence the Chinese chamber of commerce in Canton proposed to undertake the task of arranging the matter with the Japanese bank, with the result that the required amount will be advanced in the form of an industrial loan. The contract has been concluded and the money will be turned over to the chamber of commerce in a short time.—*Japan Times.*

Japan's Specie Holdings.—Japan's specie holdings on December 15 broke the latest record, the total reaching 2,117 million yen, an increase of 28 million yen as compared with the end of November. The particulars are as follows :—

	December 15 (In millions)	Comparison with November 30
Held by Government	884	— 4
Held by Bank of Japan	1,233	+32
Retained at Home	1,051	+33
Retained abroad	1,066	— 5

New Bank for Shanghai.—The Equitable Eastern Banking Corporation has opened temporary offices at No. 1 Kiukiang Road. Upon completion of the new Robert Dollar Company's building in Canton Road, the bank will move into a handsome suite of offices on the ground floor of the new building. This bank is designed to facilitate and develop far eastern business now being done by the Equitable Trust Co. of New York. It has a capital of $2,000,000, with a surplus of $500,000.

Amalgamation of Banks, Japan.—Three large banks in Toyama city, Japan, are to be amalgamated in the near future. The amalgamation will take the form of a newly-established bank with a capital of Y.2,000,000.

New Chinese Bank.—A new Chinese bank (the Chung Nan) is shortly to be opened in Shanghai. The capital, about $20,000,000, will come from overseas Chinese. The bank will be situated at the corner of Hankow and Szechuen Roads, and will be formally opened some time in April.

New Sino-French Bank.—With the co-operation of certain large French interests, the Chinese financiers and capitalists, Chu Pao-san, Shen Lien-fang and several others have now organized a Sino-French banking corporation in the French Concession of Shanghai with a capital of ten million dollars. It is reported that this new Sino-French banking corporation has signed an agreement with the ministry of finance for a loan of three million dollars to tide over the financial difficulties of the Peking Government.—*Exchange.*

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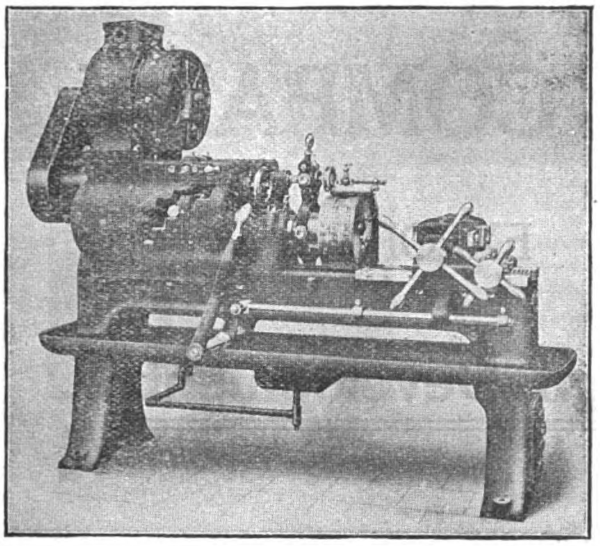

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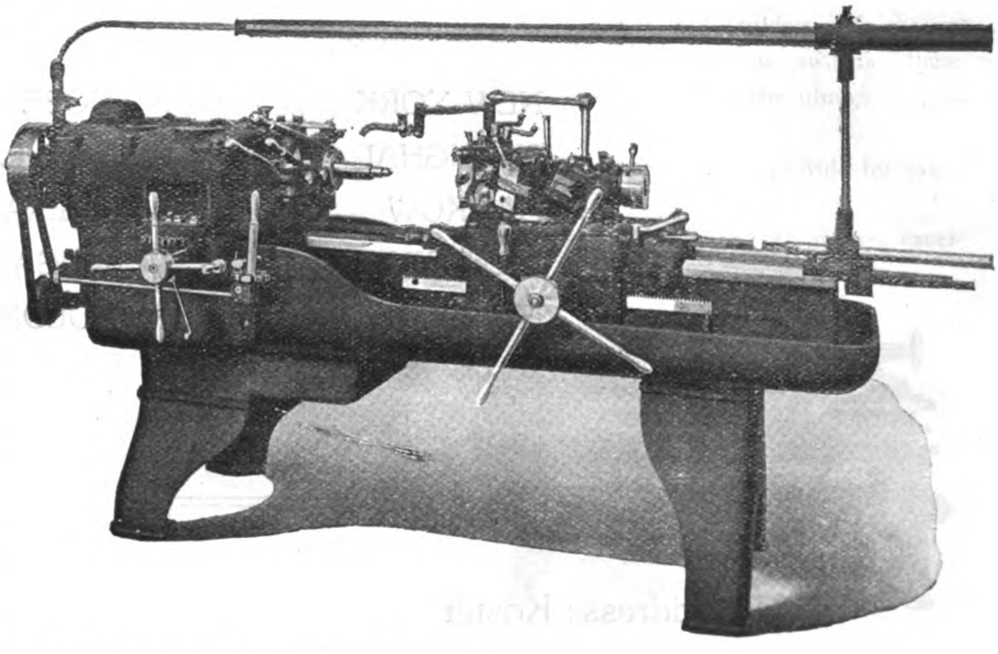

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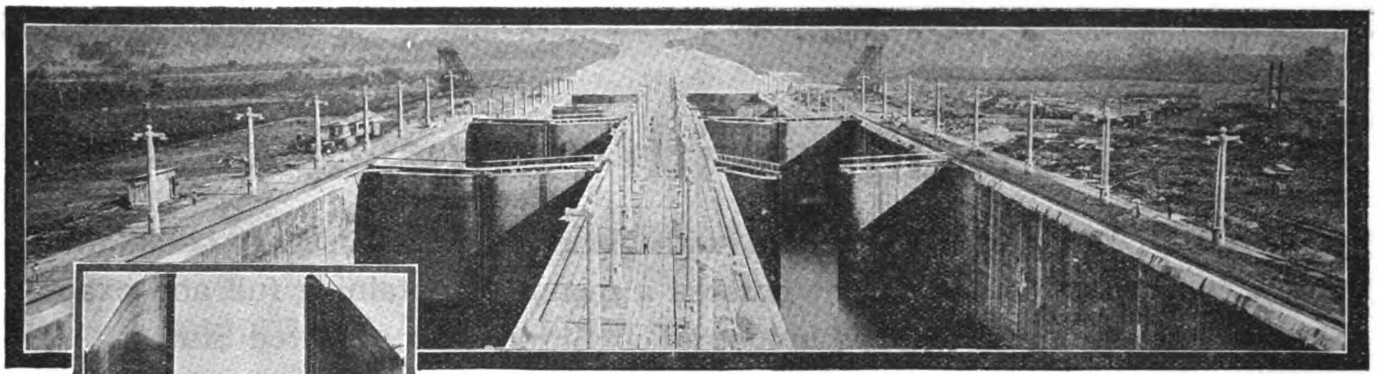

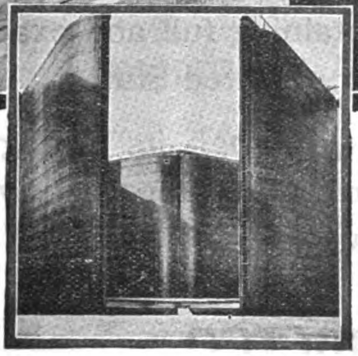

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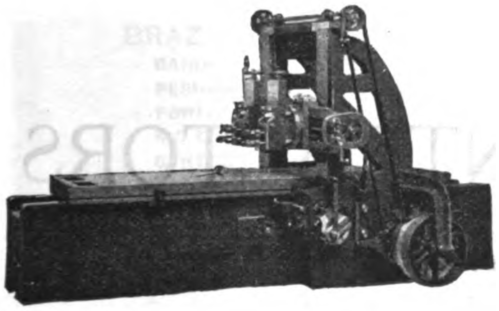

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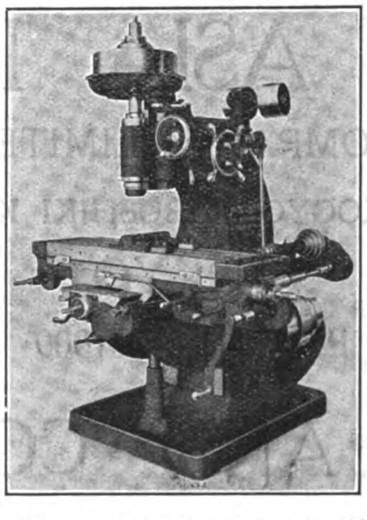

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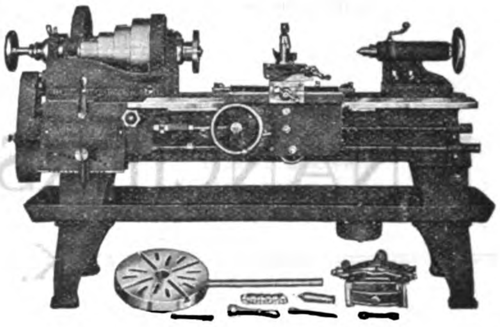

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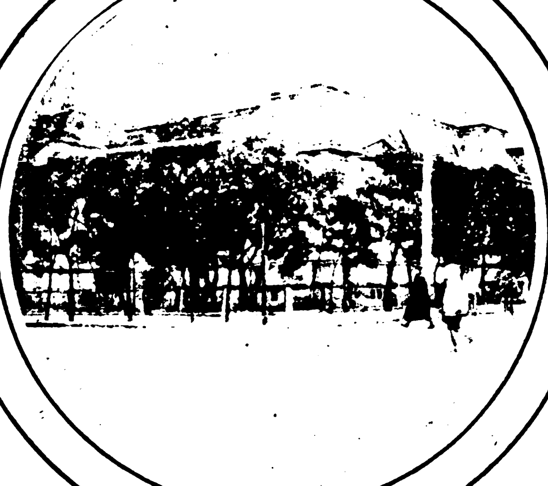
CAPITAL PAID UP & RESERVES	$35,000,000
TOTAL RESOURCES OVER - -	$560,000,000



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Capital Paid-up - - - - - - -	„ 45,000,000
Reserve Funds - - - - - - -	„ 9,680,000

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CAPITAL PAID-UP - - - - - - - - -	„ 75,000,000
RESERVES - - - - - - - - - - - -	„ 40,000,000

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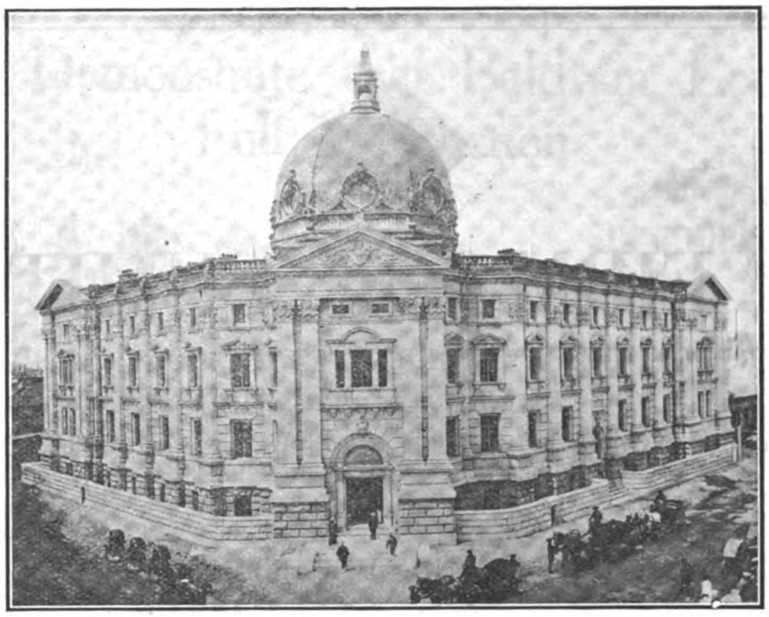

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Every description of Banking business transacted.
For particulars, apply to the managers.

THE FIRM OF SUMITOMO

OWNERS OF BESSHI COPPER MINE, COAL MINE, ETC.

MANUFACTURERS OF

Tubes, Plates, Sheets and Bars of Copper Brass, Bronze and other Copper Alloys, Solid Drawn Steel Tubes, Nails, Electric Wires and Cables, Artificial Fertilizer, etc.

WORKS AND DEPARTMENTS

General Head Office	Osaka	Tokyo Sales Department	Tokyo
Besshi Copper Mine Office	Niihama, Iyo	Kure Sales Department	Kure near Hiroshima
Copper Sales Department	Osaka & Kobe	Yokosuka Sales Department	Yokosuka
Warehouses	Osaka, Kobe & Toyko	Hakata Sales Department	Hakata
Wakamatsu Coal Department	Wakamatsu, Chikuzen	The Sumitomo Yoko	Shanghai
Copper Works	Osaka & Amagasaki	The Sumitomo Yoko	Hankow
Electric Wire and Cable Works	Osaka	The Sumitomo Yoko	Tientsin
Fertilizer Manufactory	Niihama, Iyo	The Sumitomo Bank of Hawaii	Honolulu
Sapporo Mine Office	Sapporo, Hokkaido	The Sumitomo Bank of Seattle	Seattle

THE SUMITOMO STEEL WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of every description for Railways, Shipbuilding Yards, Mines, Hydraulic, Electric and other Engineering Works, etc. etc.

THE SUMITOMO BANK, LIMITED

OSAKA, JAPAN

Cable Address: "SUMITBANK"

President: Baron K. SUMITOMO

Capital Subscribed	Yen 70,000,000	Reserve Fund	Yen 12,000,000
Capital Paid-up	„ 40,000,000	Deposits (30th June, 1920)	„ 360,000,000

HOME BRANCHES:

Tokyo, Yokohama, Nagoya, Kyoto, Kobe, Hyogo, Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Kokura, Wakamatsu, Hakata, Kurume.

FOREIGN OFFICES:

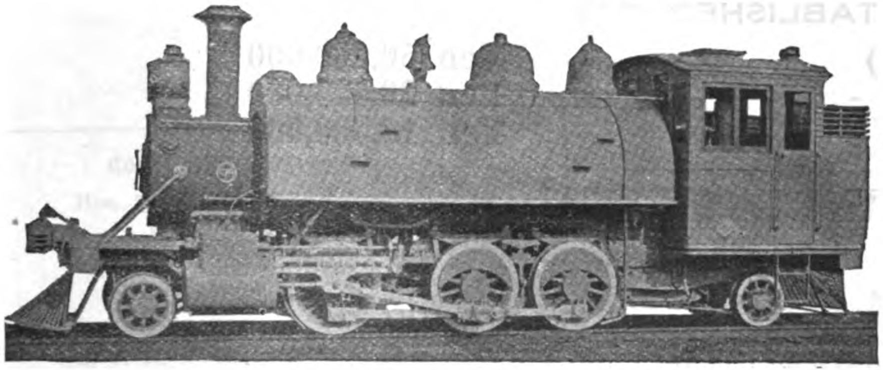
New York, San Francisco, Shanghai, Hankow, Bombay, London, Seattle (Affiliated Bank), Hawaii (Affiliated Bank).

AGENTS:

National City Bank of New York, New York. Lloyds Bank Ltd., London.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.

Repeat Orders Demonstrate that Baldwin Locomotives Give Full Satisfaction



SIX-COUPLED DOUBLE-ENDER SADDLE TANK LOCOMOTIVE

Gauge 4-feet 8½-inches. Cylinders 16 × 24-inches. Working pressure, 180 pounds per square inch. Total heating surface, 1,161 square feet. Total weight, 113,100 pounds. Tractive force, at 85 per cent. of boiler pressure, 21,360 pounds. Service, Switching and General Utility.

In 1919, the Peking-Suiyuan Railway of China ordered three 6-coupled double-ender saddle tank locomotives as illustrated. So successsful were these locomotives in operation that ten duplicates were ordered on May 22, 1920, with request for early shipment.

The first locomotive was constructed September 23. On October 15, the full number were completed and shipped from our docks at Eddystone on the s.s. *Tuscan Prince* direct to Taku Bar.

We are prepared at all times to build locomotives for foreign railways, either to our own designs or to their individual specifications, and will speed up deliveries to accommodate our customer's demands.

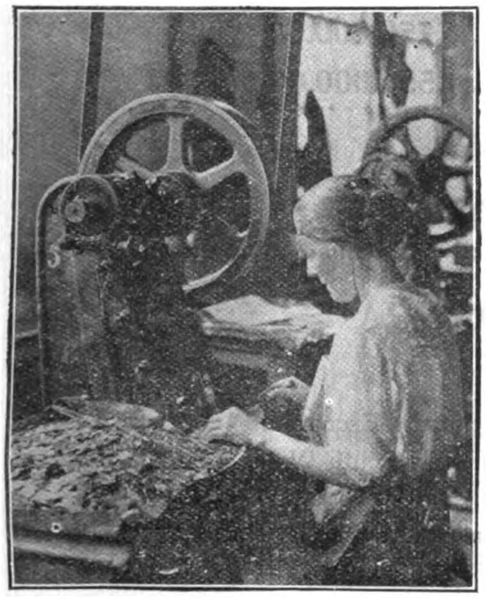
Our nearest representative is at your service at all times.

ANDERSEN, MEYER & CO., LTD., Shanghai and New York
SALE & FRAZER, LTD., Tokyo and New York
J. O. FEENSTRA, Bandoeng, Java, D. E. I.
R. TOWNS & CO., Sydney, New South Wales
LESLIE & CO., Perth, West Australia
C. BREWER & CO., LTD., Honolulu, Hawaii
PHILLIPS & PIKE, Wellington, New Zealand
NEWELL & CO., Melbourne, Victoria

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA, U.S.A. CABLE ADDRESS: "BALDWIN, PHILADELPHIA"

A PERSONAL INTRODUCTION



is here given you to a BLISS No, 18 Inclinable Press in operation in the plant of the Griest Manufacturing Company of New Haven, Conn., U.S.A. This press was installed twelve years ago and has never failed to give satisfactory service.

You are looking at an operator repunching sewing-machine attachment pendulums. She is pressing these out of cold-rolled steel, 0.065 stock, at the rate of 18,000 every 9½ hours.

There's a BLISS Press for every purpose. Write us, in full detail, of *your* particular needs (send sample, detailed drawing or blue-print; specify material, rate of production, etc.) and we will tell you just what BLISS Equipment you should have.

E. W. BLISS COMPANY

22 JOHN STREET BROOKLYN, N.Y., U.S.A.

EUROPEAN OFFICES:

London, S.E., England
Pocock Street, Blackfriars Road

Paris, France
100 Boulevard Victor Hugo, St. Quen, Paris

BLISS

DAI-ICHI GINKO, LIMITED

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Capital (Authorized) - - - Yen 50,000,000
Capital (Paid-Up) - - - - Yen 29,525,000
Reserve Fund - - - - Yen 18,500,000

BOARD OF DIRECTORS:

Y. SASAKI, Esq., Chairman. Y. KUSAKA, Esq. K. SAIONJI, Esq.
T. KUMAGAI, Esq. K. ISHII, Esq. Y. NOGUCHI, Esq.
Prince Y. TOKUGAWA. S. SASAKI, Esq. T. SUGITA, Esq.

AUDITORS:

T. DOKI, Esq. J. TAKEYAMA, Esq.

ADVISER:

Baron E. SHIBUSAWA.

Head Office: No. 1 Kabuto-cho, Nihombashi-ku, Tokyo

BRANCHES:

YOKOHAMA, OSAKA, KOBE, HYOGO, KYOTO, FUSHIMI, NAGOYA, YOKKAICHI, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, SEOUL AND FUSAN.

CORRESPONDENTS:

The Bank, in addition to its own Branches, has Correspondents in the principal cities and towns at home and abroad, and is able to give every facility for the transmission and collection of money.

THE RATES OF INTEREST on Current Accounts, Fixed Deposits and Special Current Accounts can be ascertained on application. CHEQUES certified by this Bank are taken as cash for the Customs Duties, and DEPOSIT RECEIPTS of this Bank as security for the Consumption Tax.

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Capital fully paid up ... ... P. 6,750,000.00
Reserve funds ... ... P. 4,550,000.00

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

London: National Bank of Scotland, Ltd.
Spain: Banco Hispano-Americano
Hongkong: Netherland India Commercial Bank
San Francisco: Wells Fargo Nevada National Bank
New York: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.
Paris: Comptoir National d'Escompte
Australia: Bank of New South Wales
Shanghai: Bank of Canton, Ltd.
Chicago: Continental & Commercial National Bank
Japan: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, *President*

No. 10 PLAZA DE CERVANTES, MANILA, P. I.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	... ...	$15,000,000
Reserve Funds: Sterling	... ...	£1,500,000
Silver	... ...	$23,000,000
Reserve Liability of Proprietors	... ...	$15,000,000

Court of Directors:

Hon. Mr. E. V. D. PARR, Chairman
A. H. COMPTON, Esq., Deputy Chairman
G. M. DODWELL, Esq.
G. T. M. EDKINS, Esq.
A. S. GUBBAY, Esq.
Hon. Mr. P. H. HOLYOAK
Hon. Mr. J. JOHNSTONE
A. O. LANG, Esq.
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . A. G. STEPHEN

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY	MALACCA
BANGKOK	MANILA
BATAVIA	NAGASAKI
BOMBAY	NEW YORK
CALCUTTA	PEKING
CANTON	PENANG
COLOMBO	RANGOON
FOOCHOW	SAIGON
HANKOW	S. FRANCISCO
HARBIN	SHANGHAI
ILOILO	SINGAPORE
IPOH	SOURABAYA
JOHORE	TIENTSIN
KOBE	TSINGTAO
KUALA LUMPUR	VLADIVOSTOCK
LONDON	YOKOHAMA
LYONS	

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

Managing-Directors:
YUTSUHA SATO, Esq. KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
MARQUIS YORIMICHI TOKUGAWA
VISCOUNT YUKIYOSHI AOYAMA
HON. NAGAYUKI ASANO
YOSHITERU SHIMIZU, Esq.
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
BARON MICHITOMO IWAKURA
NAOYOSHI YAMAMOTO, Esq.
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

Head Office Manager: **Kiyosumu Tanikawa, Esq.**

LONDON BANKS AND AGENTS:

LAZARD BROTHERS & CO., LTD. UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINISTER AND PARR'S BANK, LTD.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED - - - - - - Yen 50,000,000
CAPITAL PAID-UP - - - - - - - Yen 45,000,000

HEAD OFFICE:
MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:
TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
Y. ONO, Esq., Vice-President
K. IYANAGA, Esq., Director
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:
NAGATANE SOMA, Esq.
KINTARO HATTORI, Esq.
KINICHI KAWAKAMI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City
Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

THE

MITSUBISHI BANK,

LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida   Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo   Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku, Tokyo, Japan.

BRANCH OFFICES:

Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1680

Capital Subscribed... ....Y. 100,000,000.00
Capital Paid-Up.....................Y. 60,000,000.00
Reserve Fund (July 1920)......Y. 24,200,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku,
TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

MORINOSUKE MITSUI, Esq., TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

OTARU, FUKAGAWA (Tokyo), HAKOZAKI (Tokyo), YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London: Barclays Bank, Ltd.
London Joint City & Midland Bank, Ltd.

New York: The National City Bank of New York.
Guaranty Trust Co. of New York.
The Chase National Bank.
Bankers Trust Co.

Paris: Banque de l'Union Parisienne.
Comptoir National d'Escompte de Paris.

Bombay: National Bank of India, Ltd.

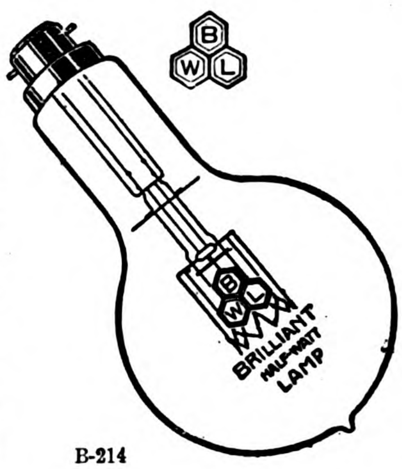
BRILLIANT Half Watt LAMPS

give MORE LIGHT, BETTER LIGHT at LESS COST than any vacuum lamp.

Call at our Show Room Nanking corner Honan Roads and we'll convince you.

THE BRILLIANT ELECTRIC CO.

Dependable Suppliers of Everything Electrical.



博利安半華德電泡

加倍光明減半電費

博利安電料公司

上海英大馬路拋球場

電話中央四九〇七

B-214

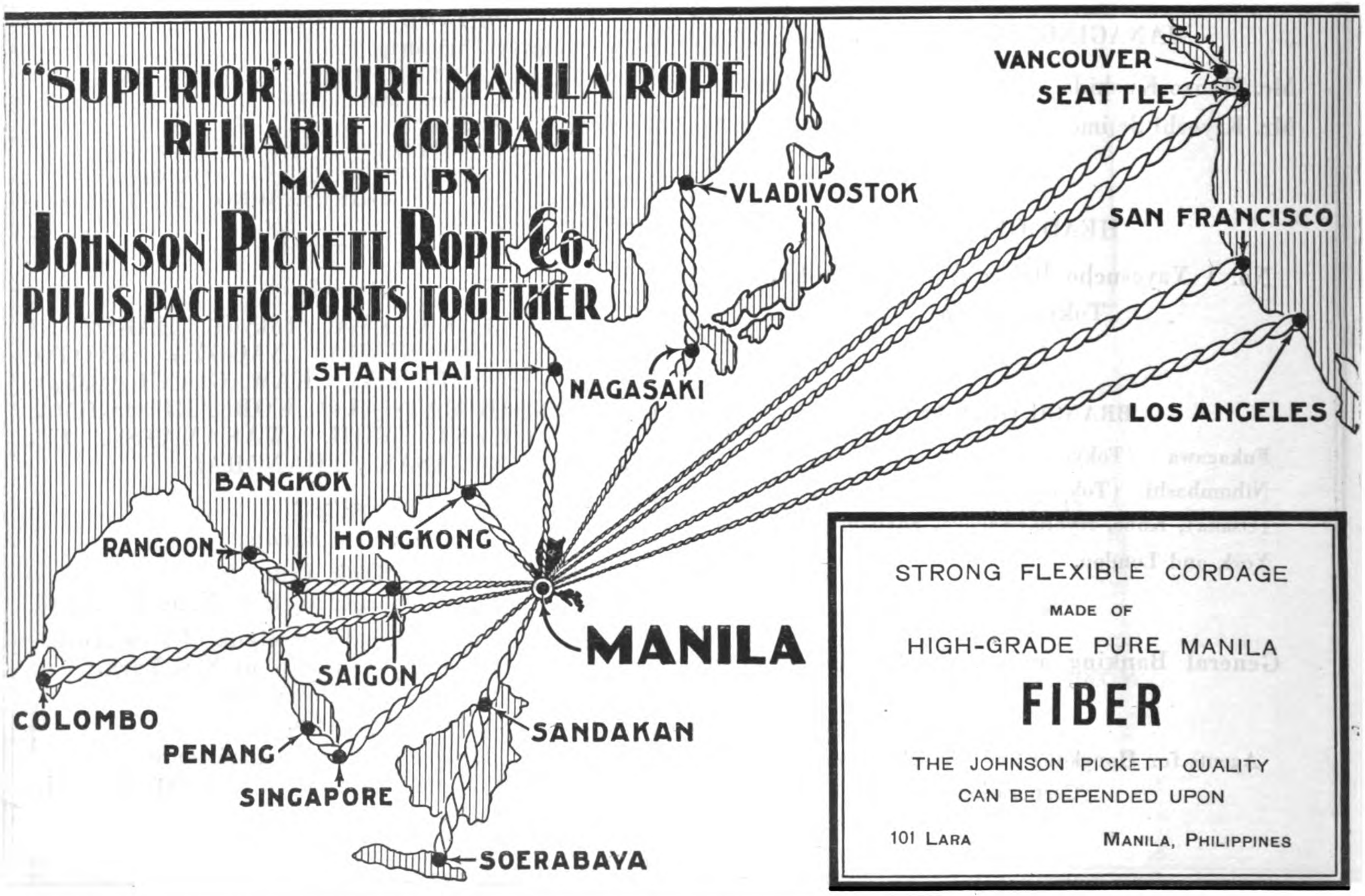
MITSUBISHI MARINE & FIRE INSURANCE Co., Ltd.

MITSUBISHI KAIJO KASAI HOKEN K. KAISHA

Head Office:
MARUNOUCHI, TOKYO

SUBSCRIBED CAPITAL - -	Yen	5,000.000
PAID-UP CAPITAL - - -	,,	1,250.000

Branches and Agencies:
LONDON, NEW YORK, OSAKA, KOBE, SHANGHAI, AND OTHER IMPORTANT CITIES AND PORTS IN THE WORLD



UNION INSURANCE SOCIETY OF CANTON, LIMITED

(Incorporated in Hongkong)

With which are amalgamated

BRITISH TRADERS' INSURANCE COMPANY, LTD.

AND

THE CHINA FIRE INSURANCE COMPANY, LTD.

(Both incorporated in Hongkong)

JOINT ASSETS EXCEED $30,000,000

HEAD OFFICE:	HONGKONG
LONDON BRANCH:	9 Royal Exchange, E.C.
LONDON FIRE OFFICE:	10 George Yard, E.C.

BRANCHES AND AGENCIES THROUGHOUT THE WORLD

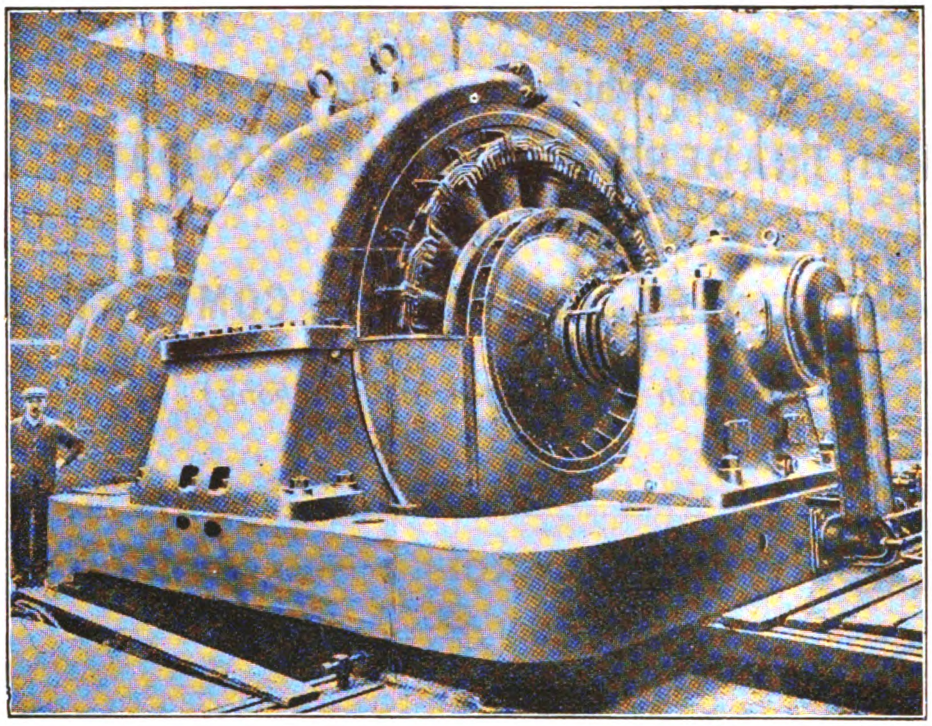
Marine, Fire, Accident, Motor Car, Burglary, Guarantee, Workman's Compensation, and all other classes of Insurance, except Life.

C. MONTAGUE EDE,
General Manager.

THE ENGLISH ELECTRIC COMPANY, LIMITED

WORKS—
ORDNANCE WORKS, COVENTRY.
SIEMENS WORKS, STAFFORD.
DICK, KERR WORKS, PRESTON.
PHOENIX WORKS, BRADFORD.
WILLANS WORKS, RUGBY.

HYDRO-ELECTRIC MACHINERY



ONE OF SIX 7,775 K.V.A. HYDRO-ELECTRIC GENERATORS SUPPLIED TO A JAPANESE COMPANY

THE COMPANY ARE MANUFACTURERS OF: STEAM TURBINES, CONDENSERS, DIESEL OIL ENGINES, ELECTRIC POWER AND SUB-STATION PLANT, COMPLETE ELECTRIC RAILWAY AND TRAMWAY EQUIPMENTS, ROLLING STOCK, A.C & D.C. MOTORS, SWITCHGEAR, ETC.

JAPANESE OFFICE:
ENGLISH ELECTRIC CO., LTD., 3 ITCHOME, UCHISAIWAICHO, KOJIMACH-KU, TOKYO

CHINESE OFFICE:
JARDINE, MATHESON & CO., LTD., ENGINEERING DEPT., 8a YUEN-MING-YUEN ROAD, SHANGHAI

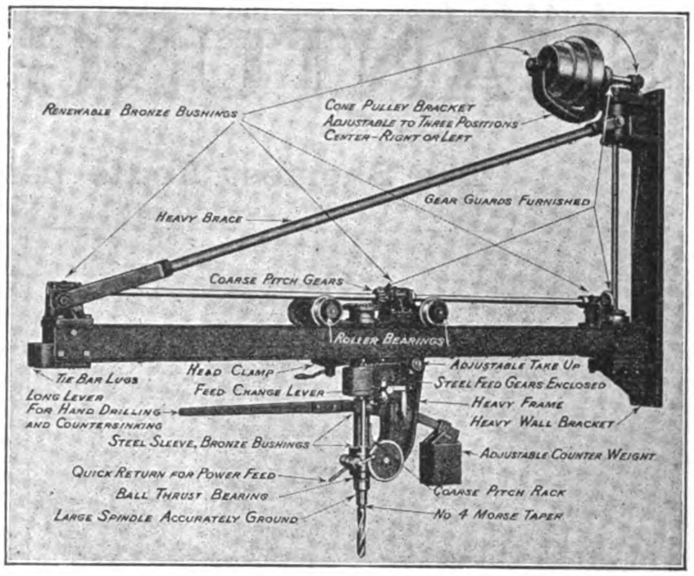
HEAD OFFICE:
QUEEN'S HOUSE, KINGSWAY, LONDON, W.C.2
CABLES—"ENELECTICO LONDON"

"Could Not Afford to be Without these Machines,"

says one of our customers who has had them in operation several years. You would find the same condition with an installation of these WALL RADIAL DRILLS in your shop. There would be no question about the results you would obtain, as the machines are built to give absolute satisfaction, and they are, without exception, fulfilling their purpose.

Our descriptive bulletin gives details of construction.

GET IT TO-DAY.



MADE IN FOUR STANDARD SIZES

Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.

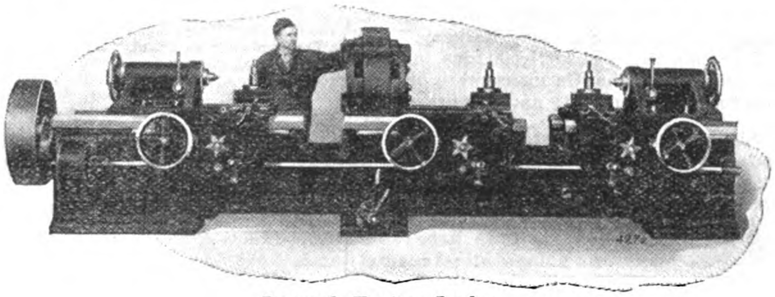
LYND-FARQUHAR CO.

Machine Tools of Quality.

419-425 ATLANTIC AVE.,

Boston 9, Mass., U.S.A.

BETTS-BRIDGEFORD HEAVY DUTY JOURNAL TRUING AND AXLE LATHES.



Journal Truing Lathe

It makes labor easier, workmen more efficient and prouder of their work to be provided with the proper tools.

For Tramway repairing or works manufacturing new equipment for Tramway or Railway Wagons, The Betts Heavy Duty Journal Truing and Axle Lathes bring certain results.

They are made to take the wheels and axles of any gauge, other than 24" and 30". They can be furnished with either two carriages for finishing the outside bearings of coach wheel axles; with three carriages which will finish at one time both outside journals, and alternately the two inside journals; or which can be used for turning locomotive axles for their full length. Can be furnished with four carriages, suitable for finishing either inside or outside journals, two at a time, without shifting the axle end for end.

For use in finishing locomotive axles over their whole length. Can be finished also with centre drive instead of end drive suitable for finishing wheel seats and their journals on new axles.

Of interest to all railway repair shops, and the shops having heavy plain shaft-turning with no thread cutting.

A Betts Machine Tool for every need in heavy duty work.—Let us have your problems.

Cable Address "Betts" Rochester

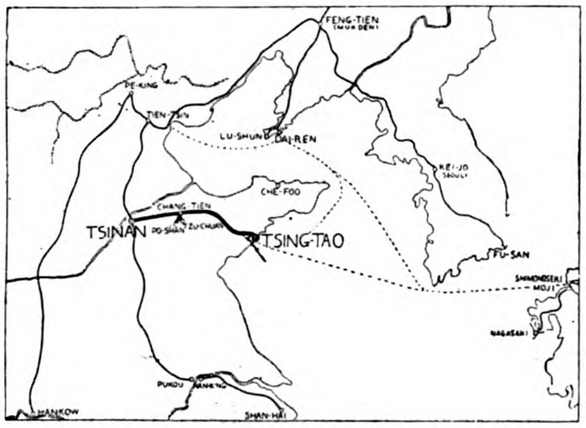
BETTS MACHINE COMPANY

BLOSSOM ROAD, ROCHESTER
NEW YORK, U. S. A.

Established in 1861

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 9.30 p.m. arrives Tsingtao 9.10 a.m.

Local Trains run between Tsingtao and Kaohi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.43 & 10.21 p.m. daily.

BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

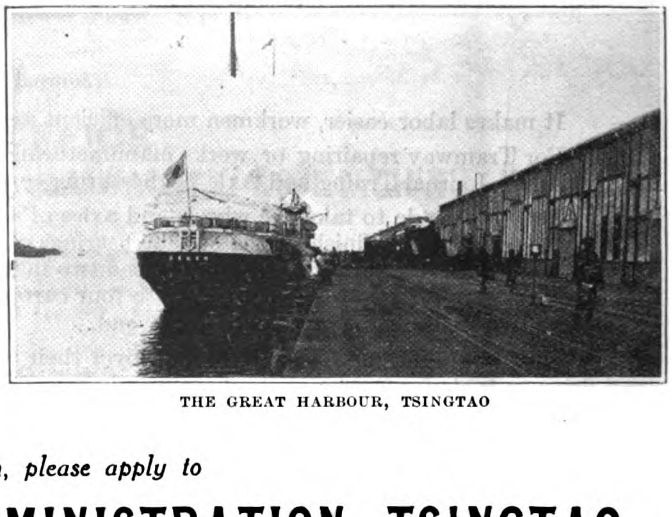
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



THE GREAT HARBOUR, TSINGTAO

For Further Information, please apply to

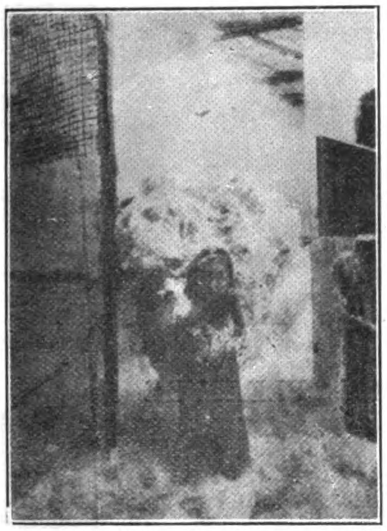
THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

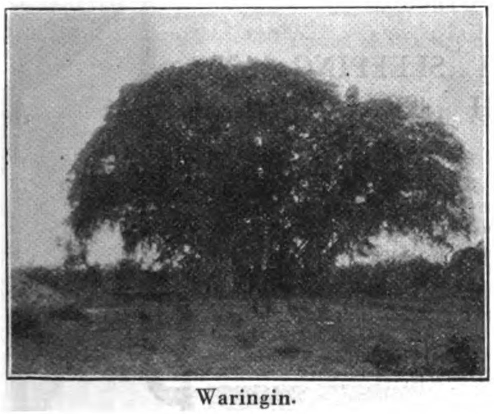
CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA?
IF NOT, DO SO NOW!

Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.


Girl Carrying Capoc.


Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

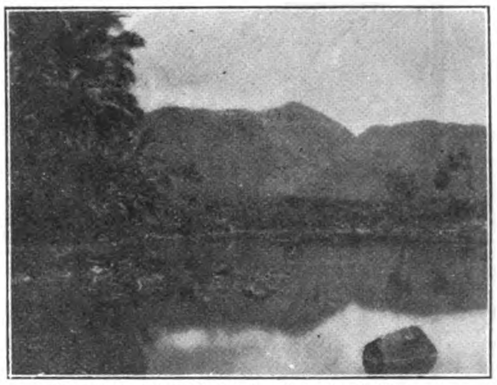
And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

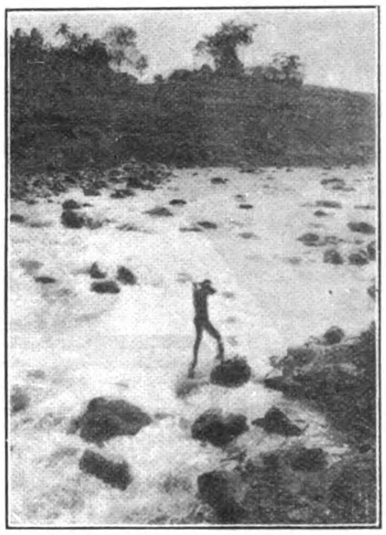
Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

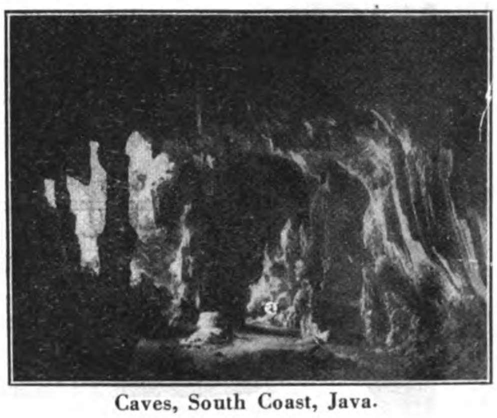
THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.

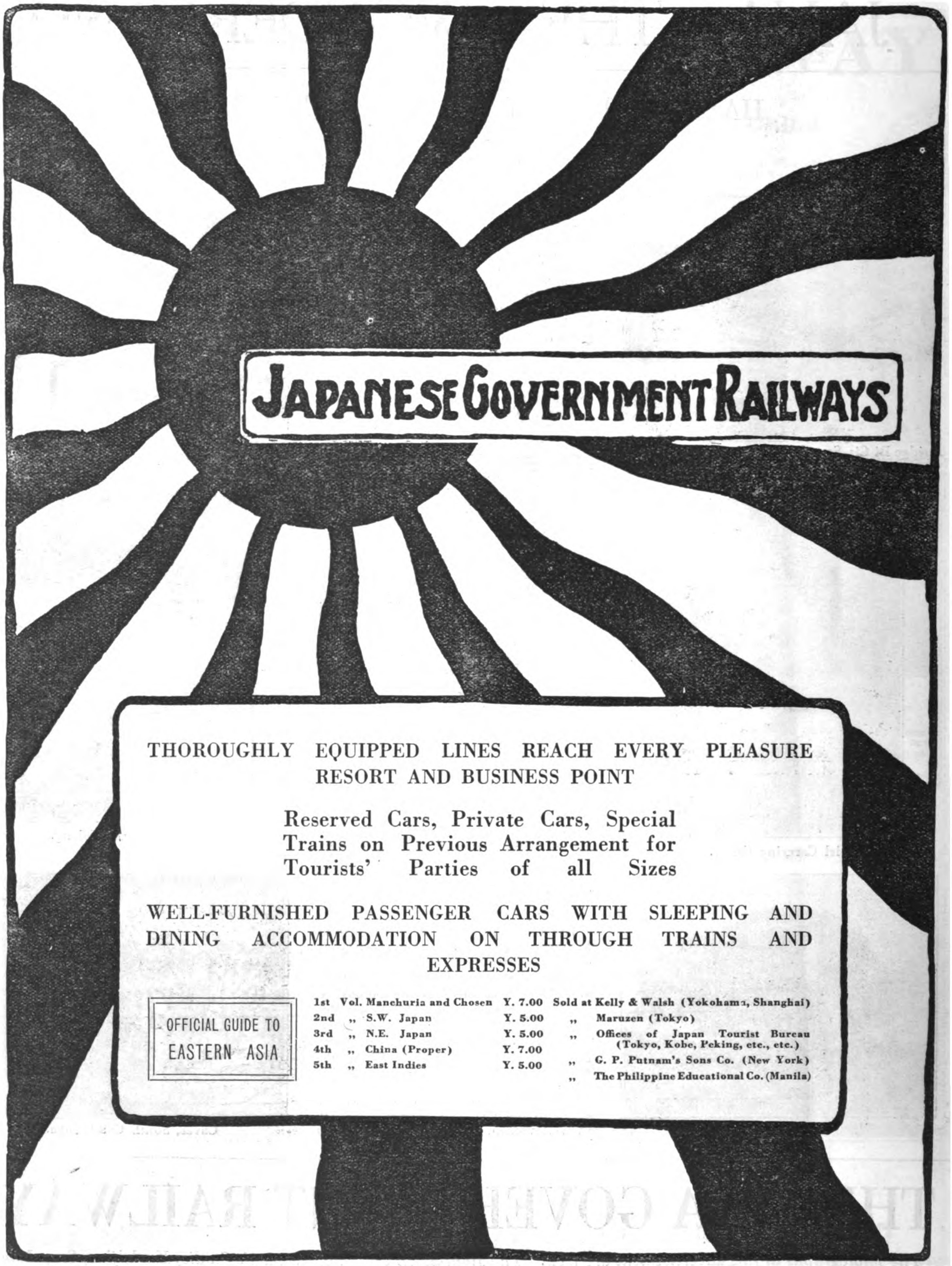

Pond in the Neighborhood of Garoet.


River Brantas, Malang.


Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

The photographs in this advertisement are from "The Joint-Stock Co., Photographer's Studio, Kurkdjian, Soerabaia."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Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes
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3rd „ N.E. Japan Y. 5.00
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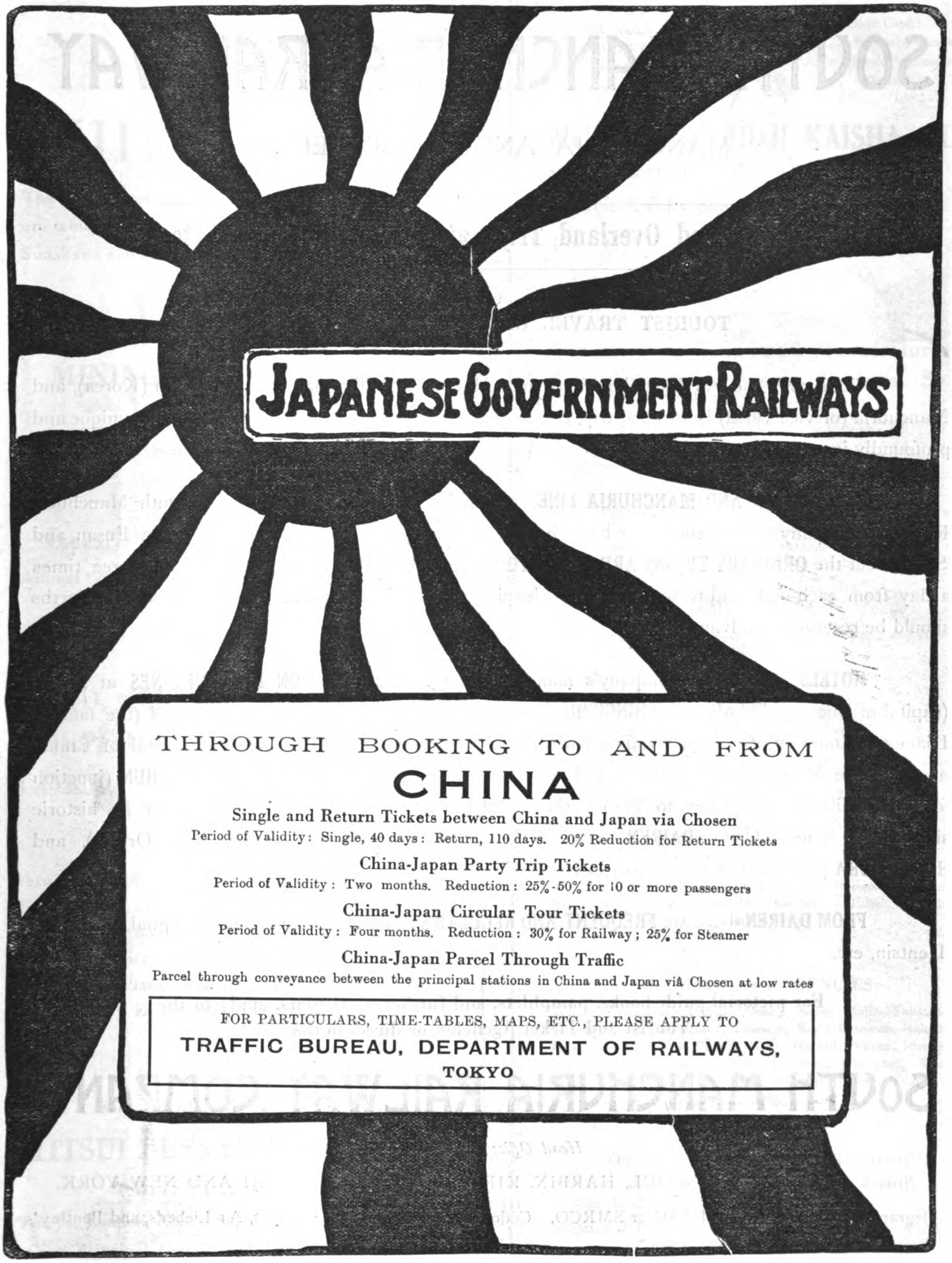
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Single and Return Tickets between China and Japan via Chosen
Period of Validity: Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets
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China-Japan Parcel Through Traffic
Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates
FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC BUREAU, DEPARTMENT OF RAILWAYS,
TOKYO

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MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

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Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

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The Finest Steaming and Bunker Coals of the Far East are mined from the famed Miike, Tagawa, Yamano, Sunakawa and Kawakami Collieries operated by the

MITSUI

MINING COMPANY, LTD.

HEAD OFFICE:
No. 1 Surugacho, Nihonbashi-Ku,
TOKYO, JAPAN

Capital - - Yen 100,000,000

Annual Coal Output is equal to one-quarter of Total Japanese Mines.

LEAD, SILVER, GOLD, ZINC, COPPER, SPELTER, SULPHUR, COKE, IRON, CHEMICALS and DYES

Are produced from the Company's, KAMIOKA, Lead, Silver and Zinc Mine; SANO, Copper and Zinc Mine; KUSHIKINO, Gold Mine; KONGO, Tungsten Mine; IWAONOBORI, Sulphur and Metal Mine; Zinc Plants, Coke, Dyestuffs and By-products Establishments in Miike.

Sole Agents for our Products:

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(MITSUI & Co., Ltd.)

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Capital, fully paid-up - - - Y. 15,000,000

Head Office:
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Coal, Copper and all Other Descriptions of Metals, Minerals and Cereals, Chemicals, Oil, Paper, Glass, Canned Fish, Silk Goods, and General Oriental Products and Merchandise

IMPORTING:

Iron, Steel, Machinery, Machine Tools, Chemicals, and General Merchandise

ANNUAL PRODUCTION:

Electrolytic Copper Ingots	20,000	Tons
Pig Iron	100,000	,,
Steel	50,000	,,
Coal	3,500,000	,,

COLLIERIES:

Takashima, Ochi, Yoshinotani, Kishidake, Namazuta, Shinnew, Hojo, Kanada, Kamiyamada, Ashibetsu, Bibai, O-Yubari, and Sakito

BRANCHES and AGENCIES:

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STEAMSHIP DEPARTMENT—KOBE

Fleet Owned	25,000	Tons	Gross
Chartered Steamers	12,000	,,	,,

Regular and Irregular Routes between home ports and Chinese and South Sea Islands Ports, etc.

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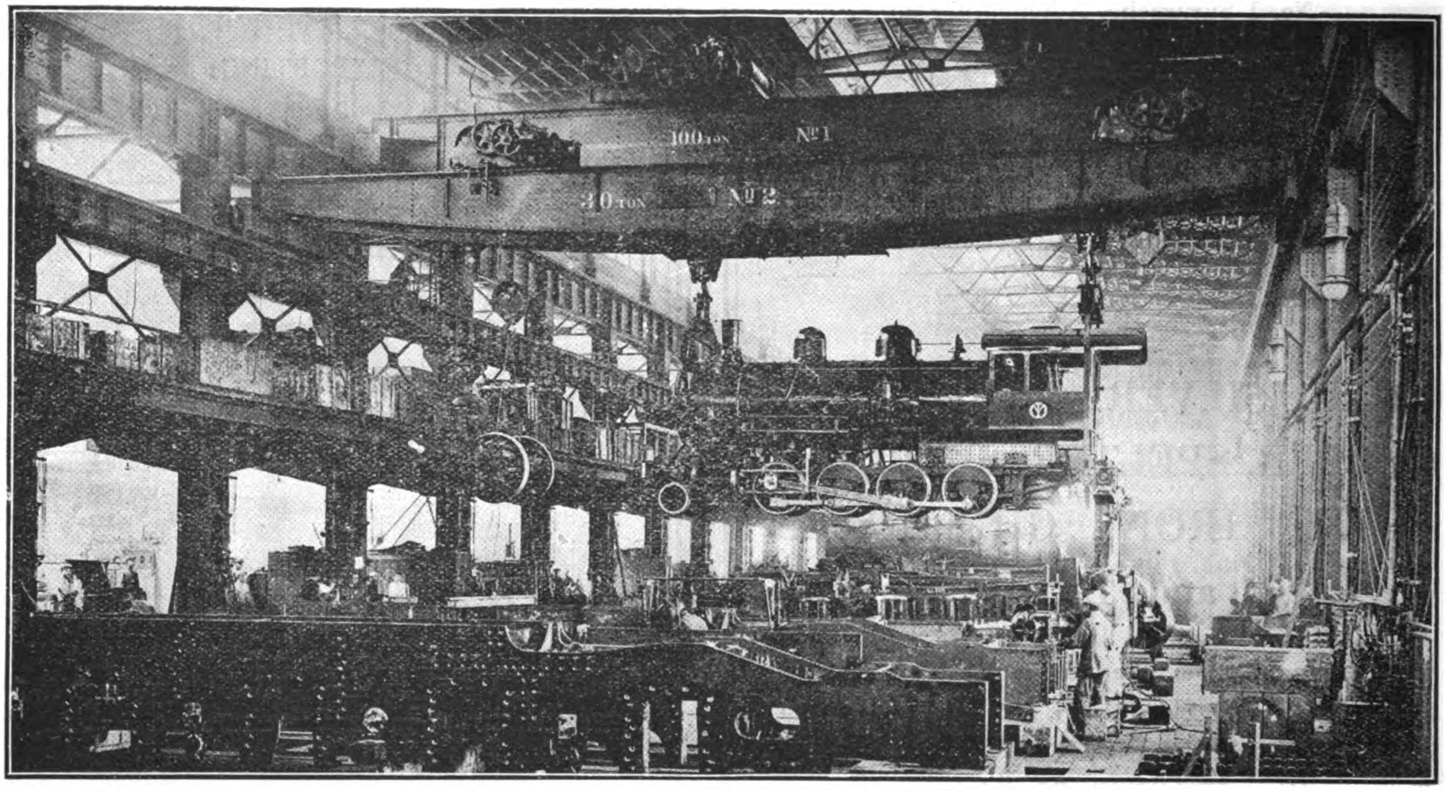
RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

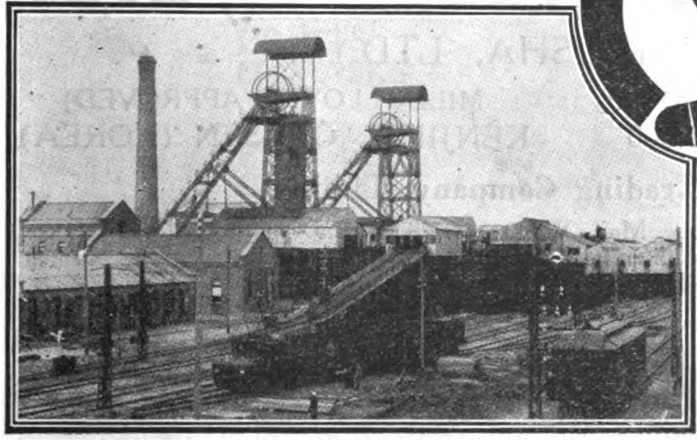
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

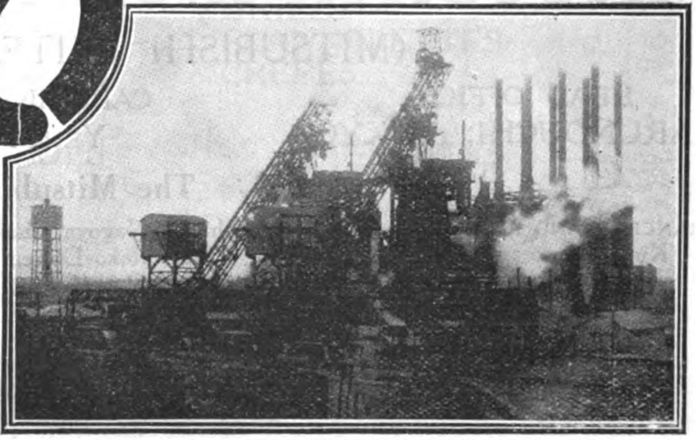
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

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The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

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Agencies:

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Also Sulphate of Ammonia, Fire Clay, and Talc

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MINING DEPARTMENT,

South Manchuria Railway Company, Dairen

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New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

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(MITSUBISHI SEITETSU KAISHA, LTD.)

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CABLE ADDRESS: "FUHO"

CAPITAL - - Yen 38,000,000
OPERATING
450,000 Spindles and
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SUGAR

RAW, REFINED AND IN CUBES

FINEST **ALCOHOL** QUALITY

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THE LARGEST SUGAR PRODUCERS IN ASIA

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CAPITAL: YEN 18,000,000; PAID-UP: YEN 12,000,000

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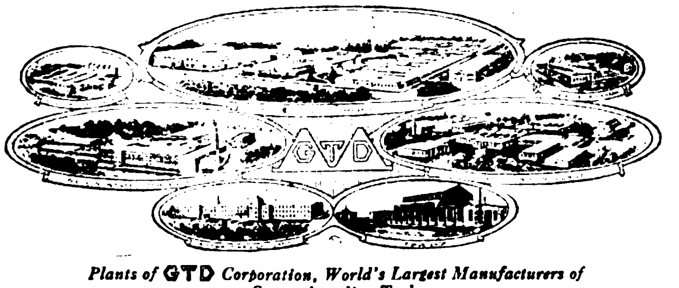

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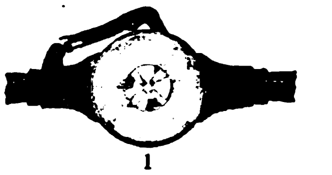
GTD

You need these tools from GTD



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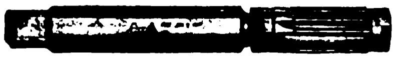
2



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1 The GTD Opening Die Stock is a hand tool which cuts an unusually accurate thread and requires slight effort to operate. After the thread is cut the die may be released, and pulled straight off the work. No time wasted in unwinding. Furnished to cut either Whitworth or USS threads.

2 "*Little Giant*" screw-plates contain assortments of tools for cutting screw-threads by hand:—taps, dies, die stocks and tap wrenches. Made by GTD in assortments suitable for every threading need. Look for the brand names, "*Little Giant*" and "OK" on screw-plates.

3 No. 490 GTD Adjustable Reamer can be adjusted to cut larger or smaller than normal. A very necessary tool for fitting tight pulleys, gears, etc. GTD makes an excellent line of reamers for all purposes including hand, expansion, taper, special Ford car reamers, repairman's taper reamer, etc.

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Name Position

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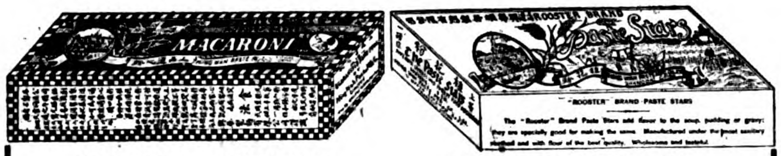

Cable Address: "HINGWAH" Code used: A.B.C. 5th Edition

香港上海興華機器製麵有限公司

The Hing Wah Paste Manufacturing Co. Ld.

Macaroni, Paste Stars, Egg Noodles, Vermicelli, and all kinds of Soup Stuffs

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Terms moderate, especially for Agencies.

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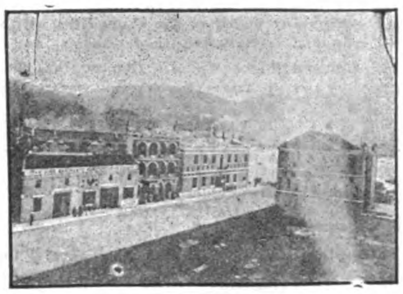

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ASAHI YEBISU SAPPORO

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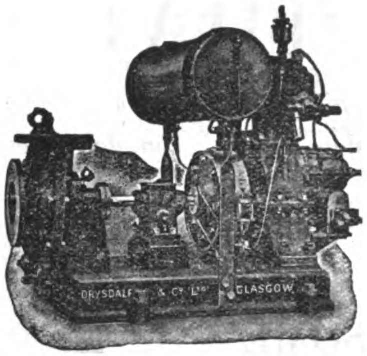

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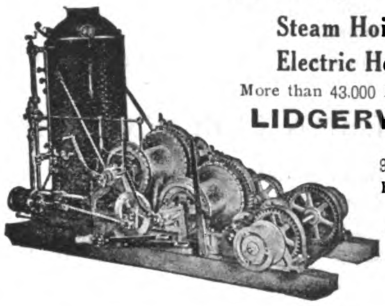

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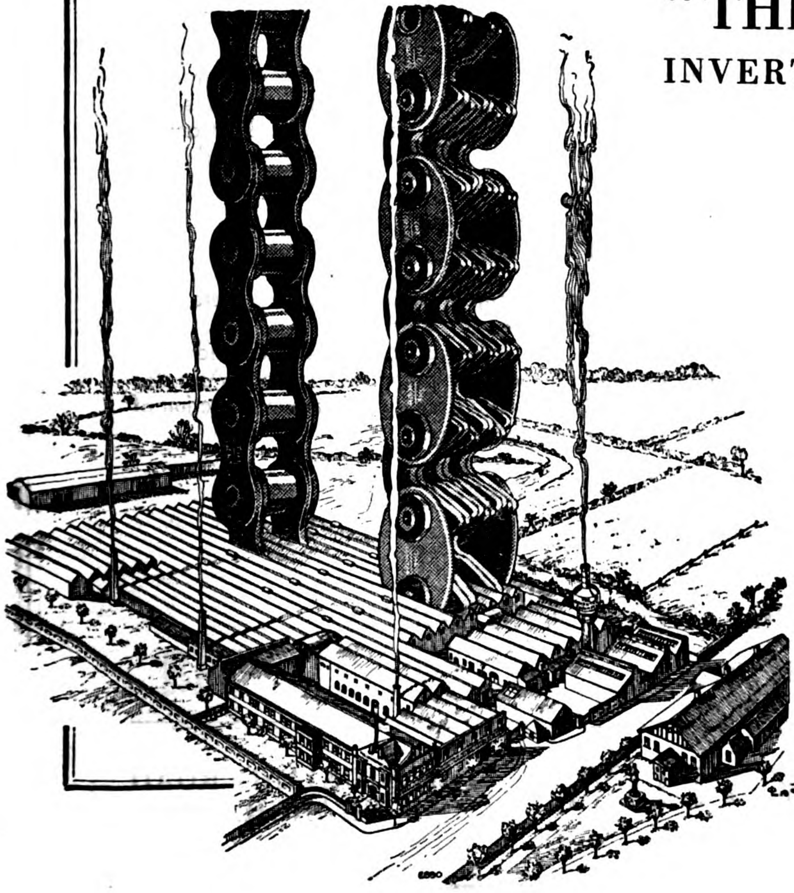

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The rubbing of those rough surfaces is friction—and that friction makes bearings run hot and wear out. What are you doing to prevent it?

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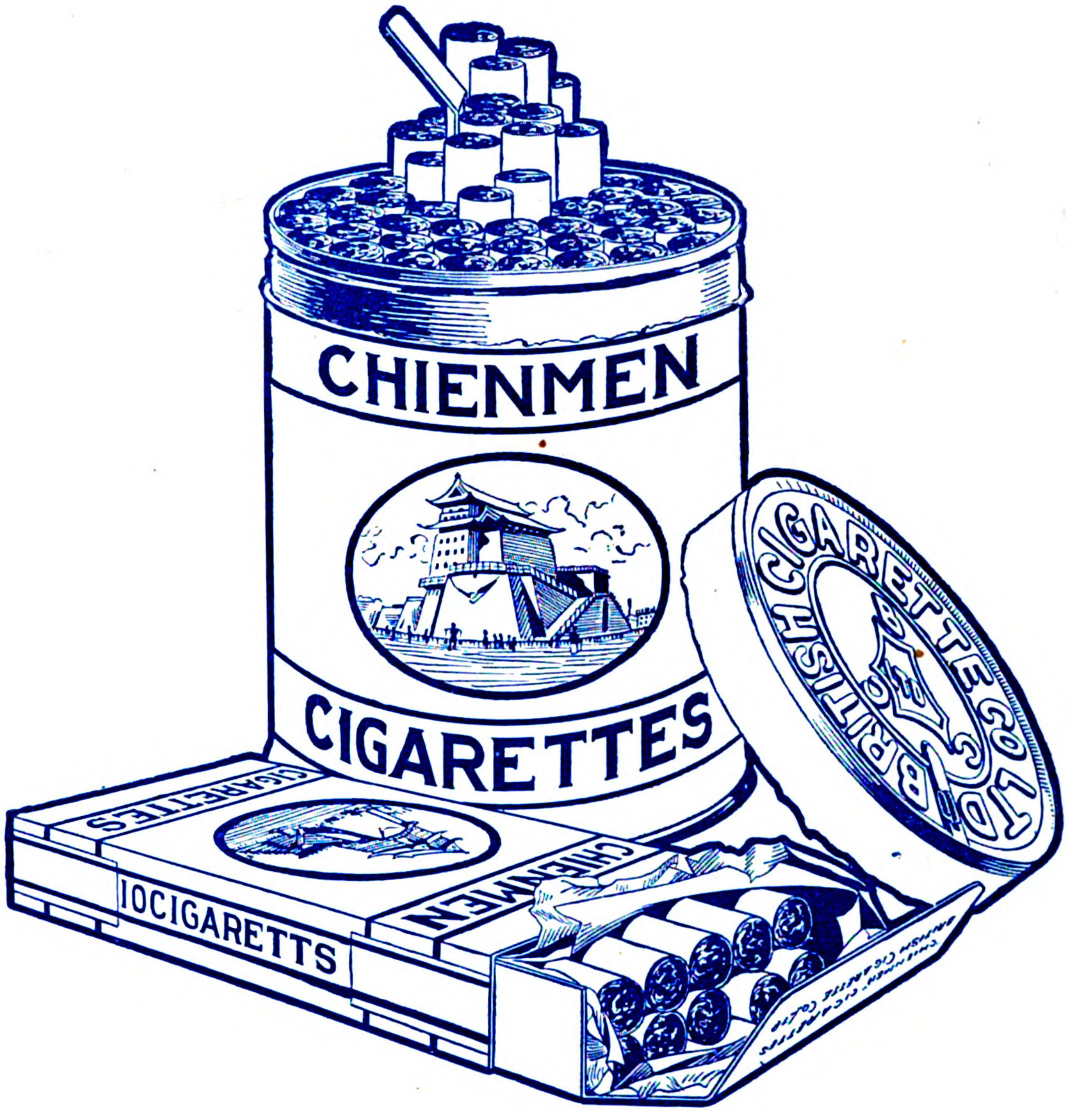

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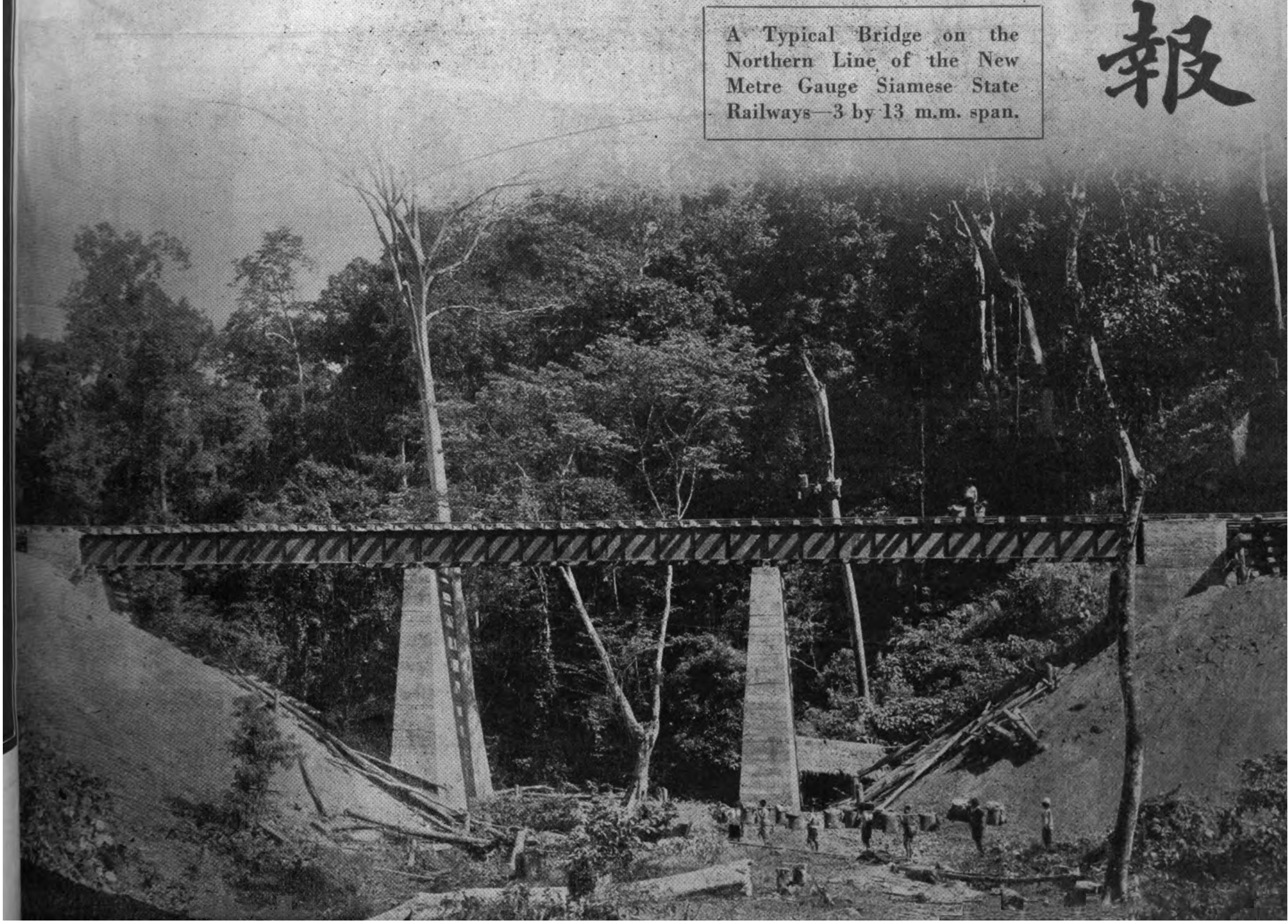
By George Bronson Rea

The Real Significance of the Consortium

America and Japan in Manchuria

A Railway Plan for the Consortium

Railway Progress in the Far East



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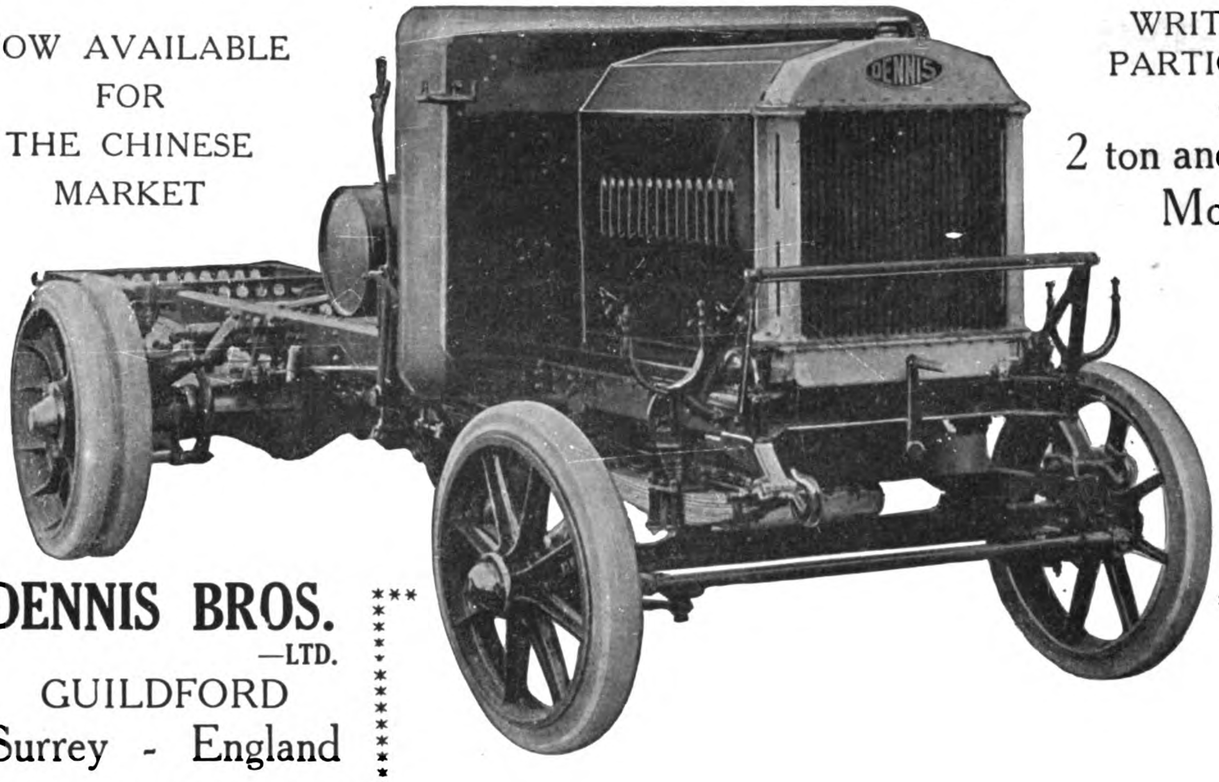

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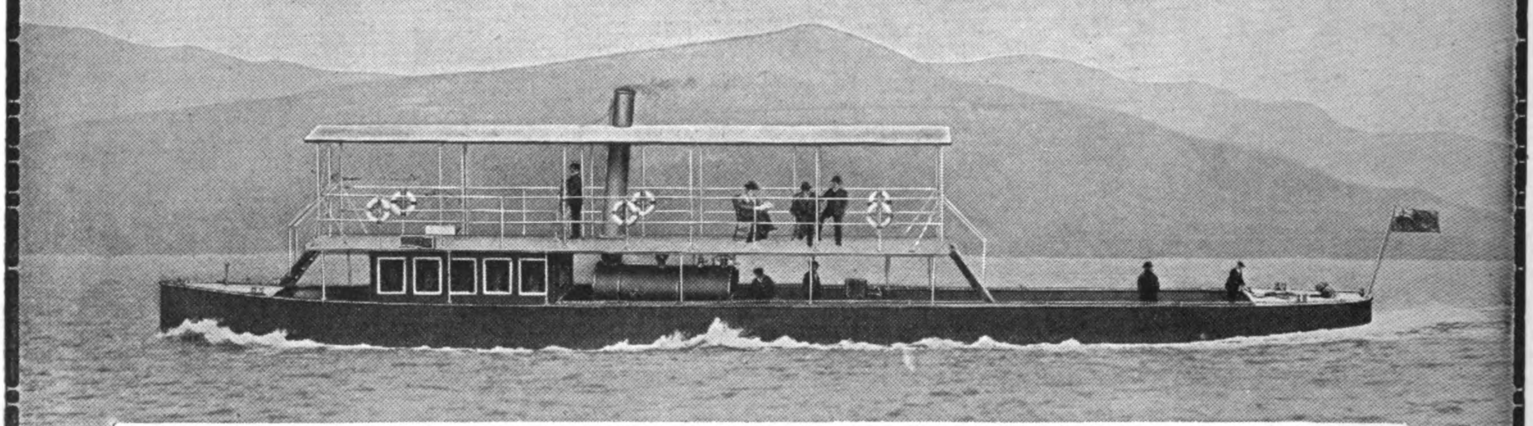

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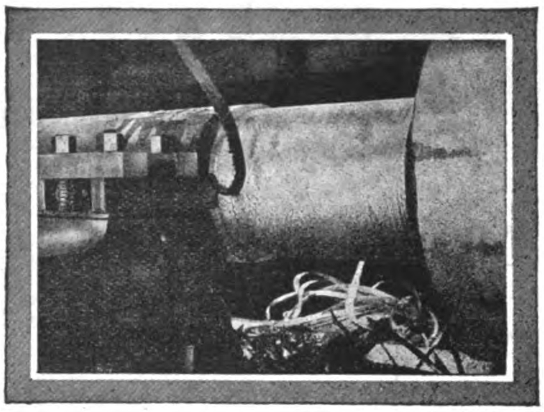

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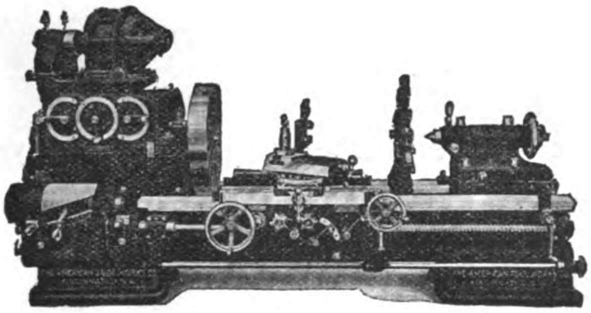

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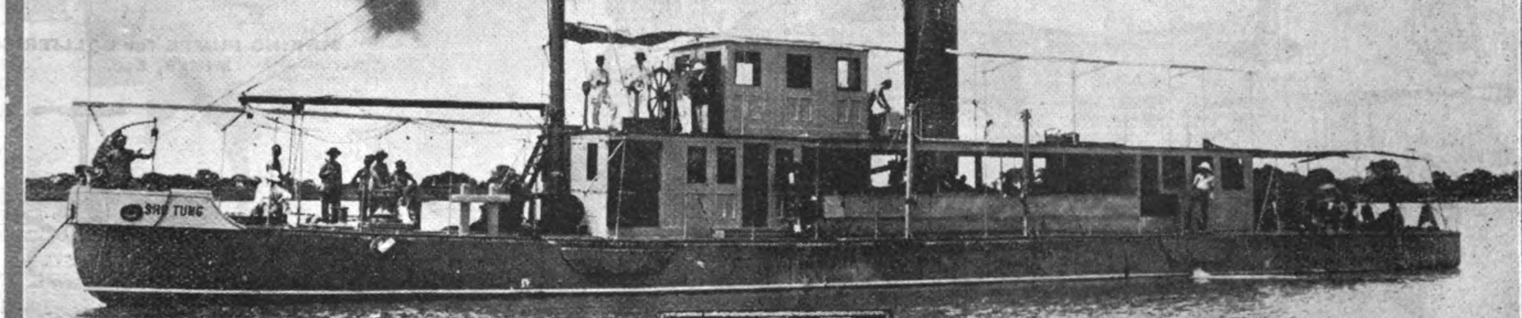

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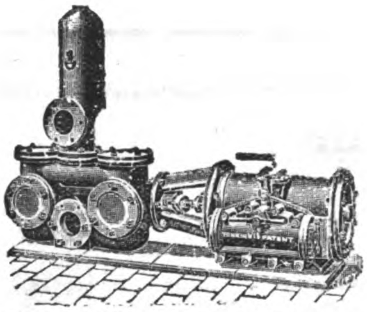

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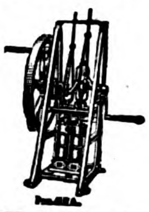

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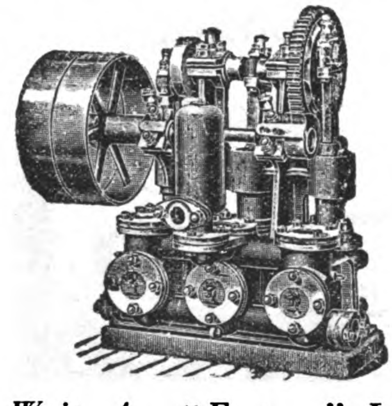

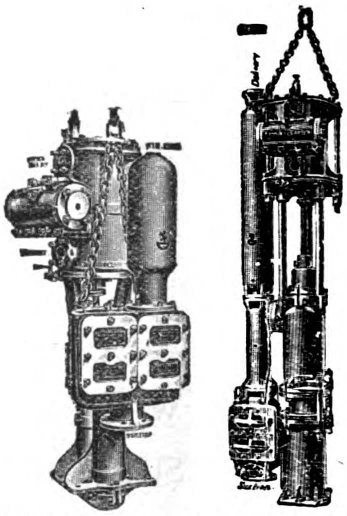

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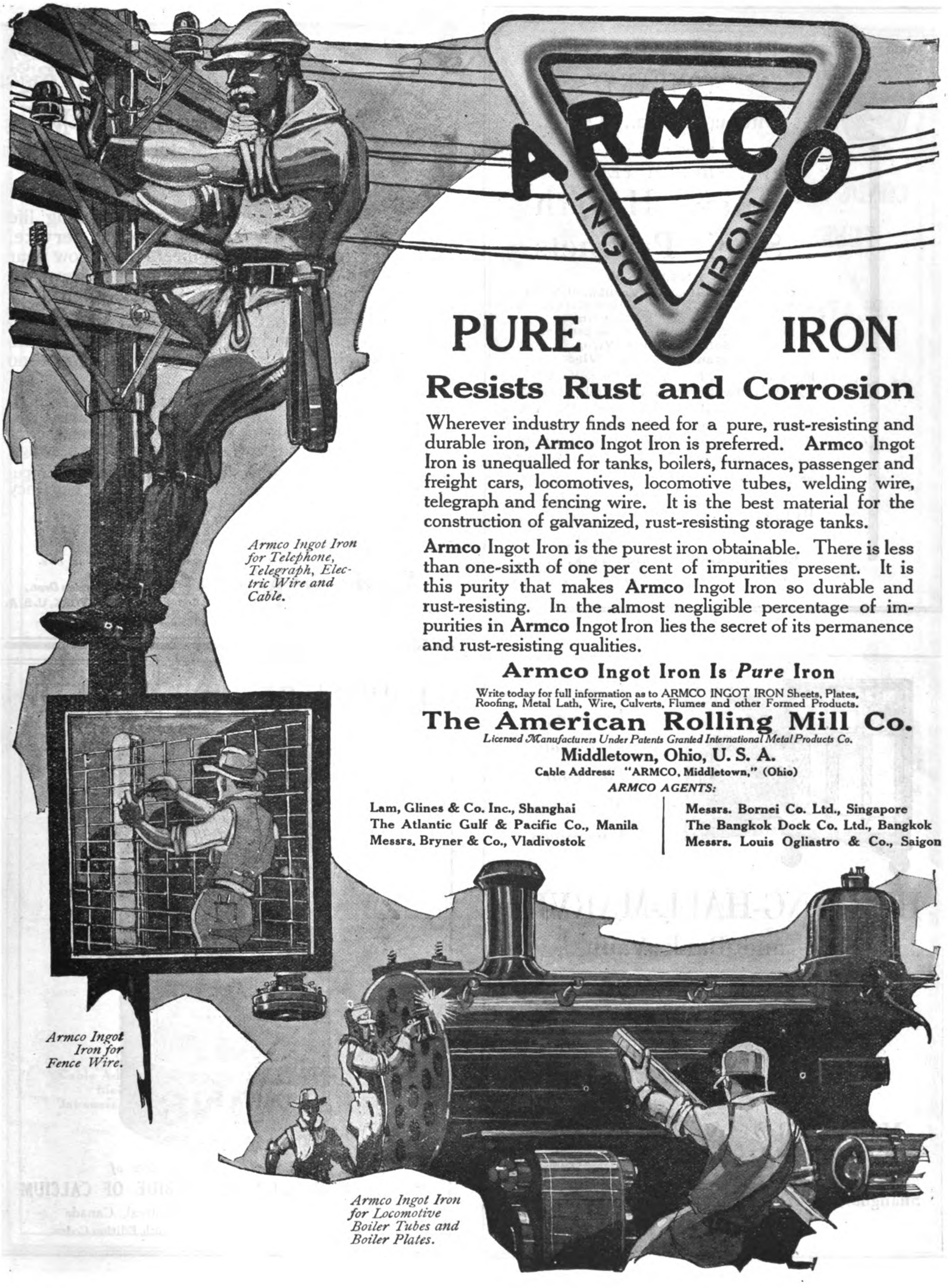
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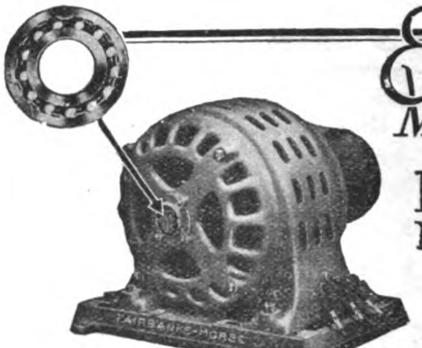

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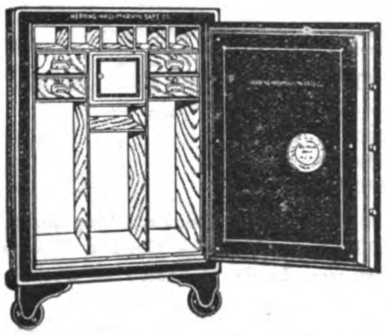

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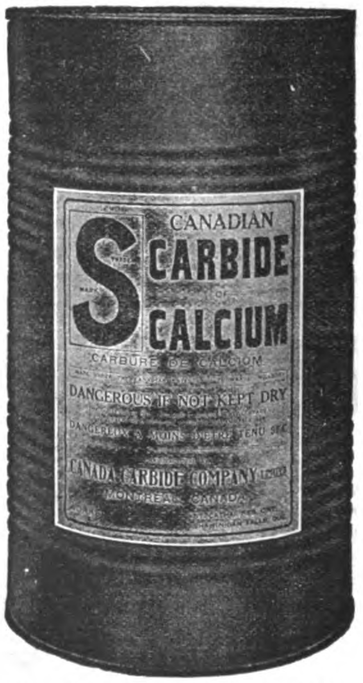

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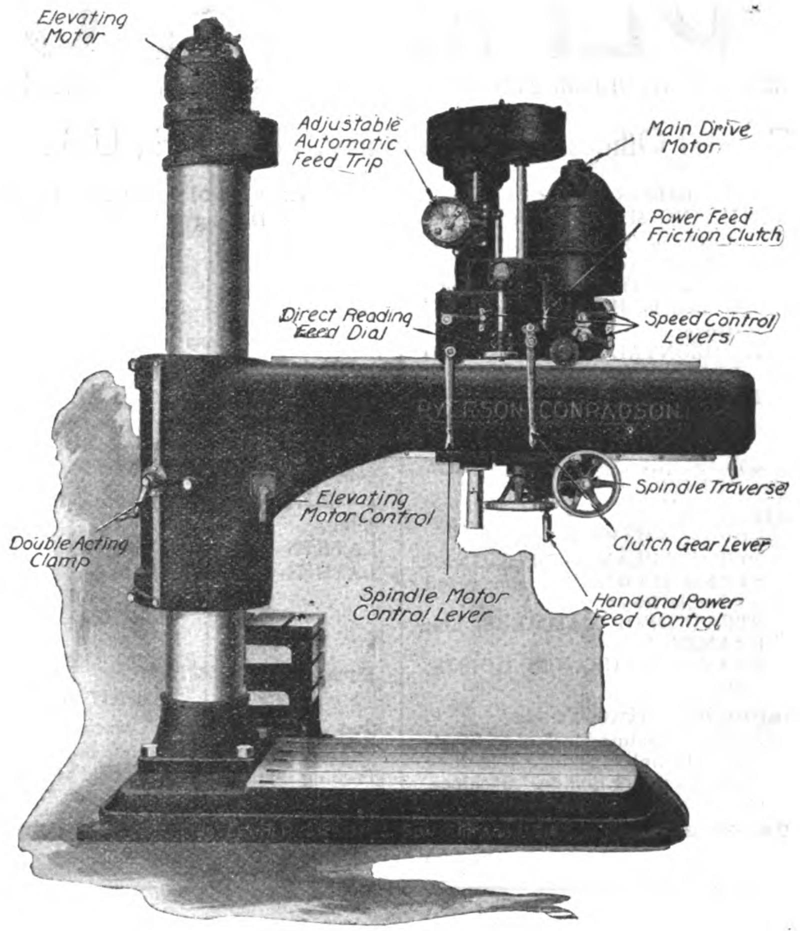

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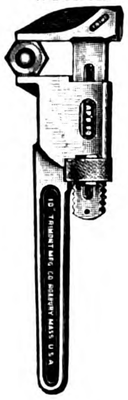

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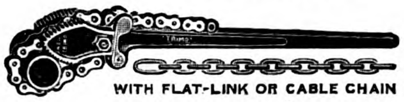

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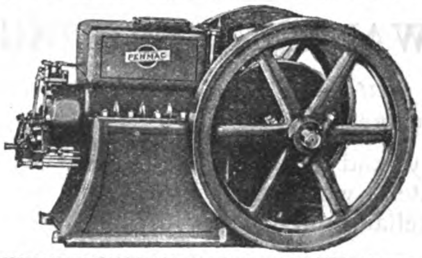

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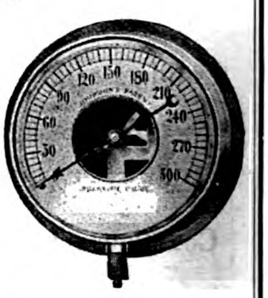

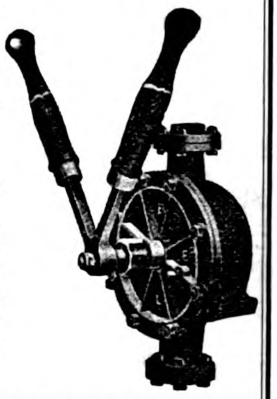

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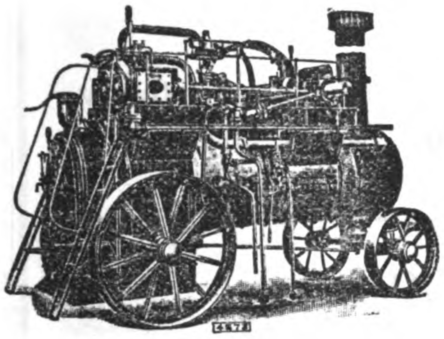

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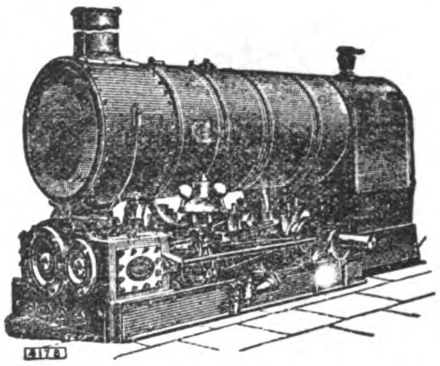

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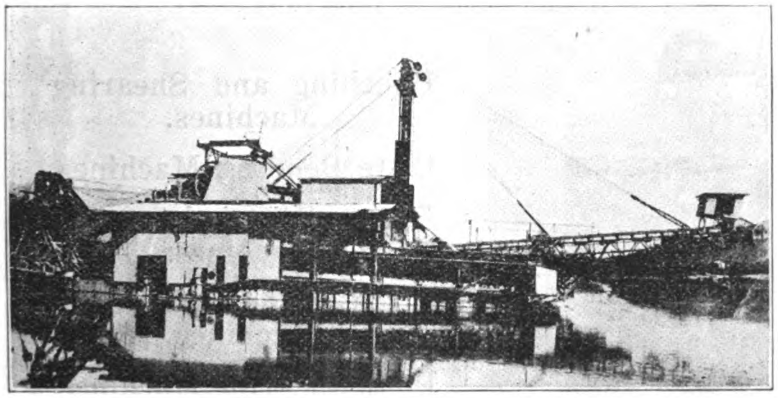

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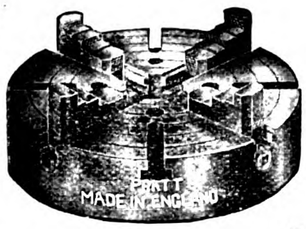

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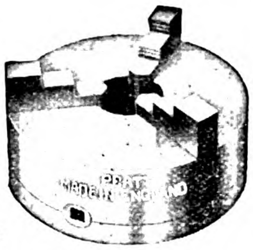

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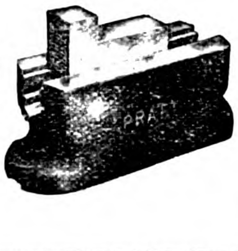

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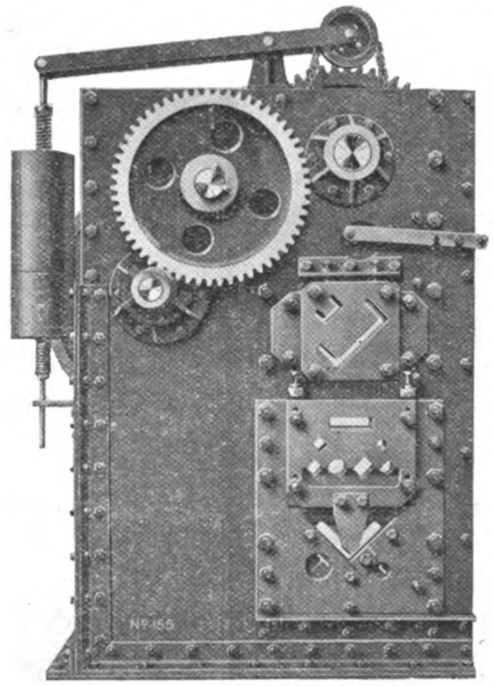

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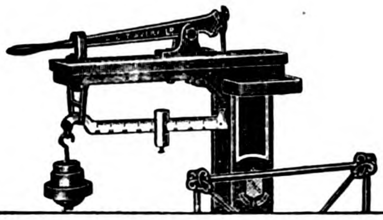

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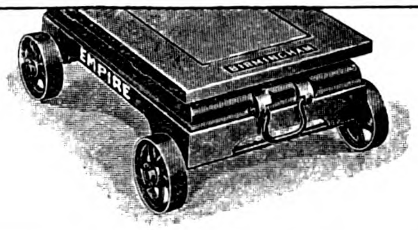

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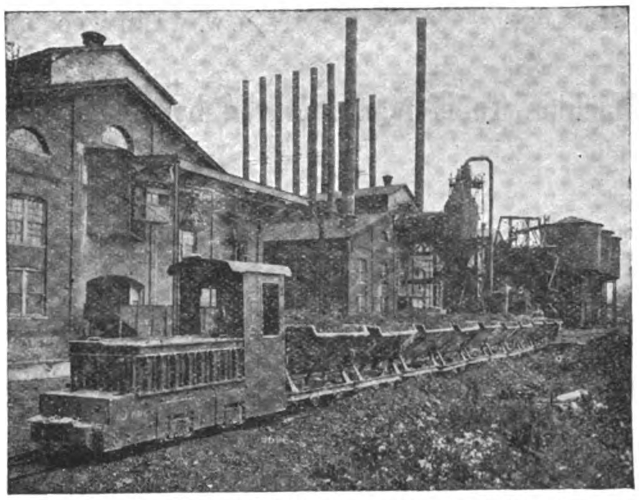

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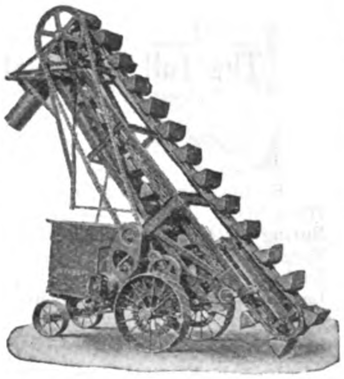

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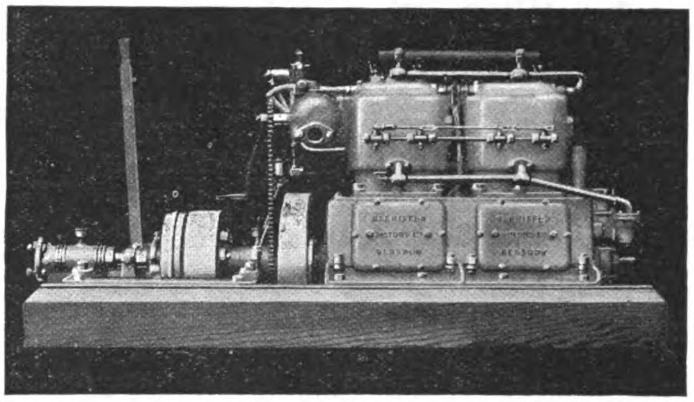

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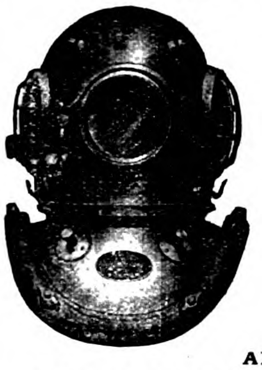

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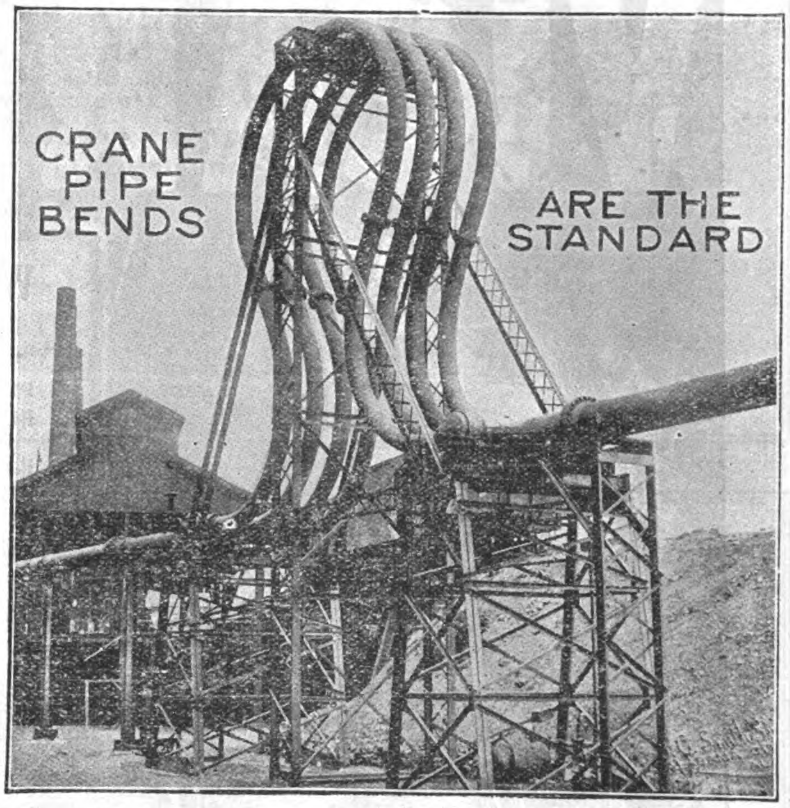

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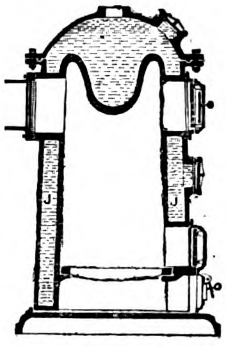
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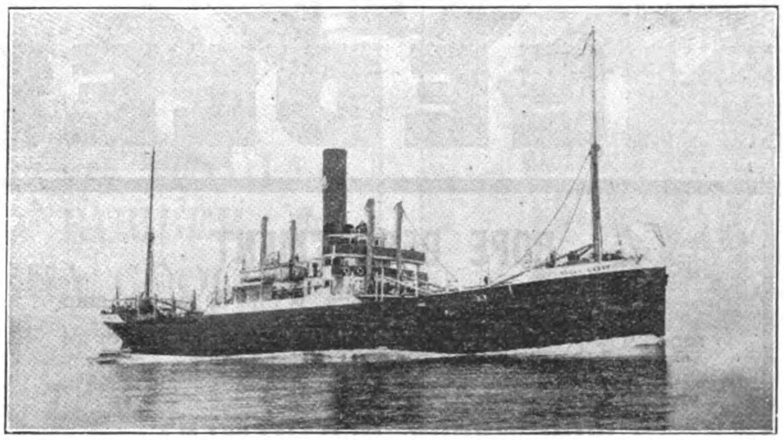
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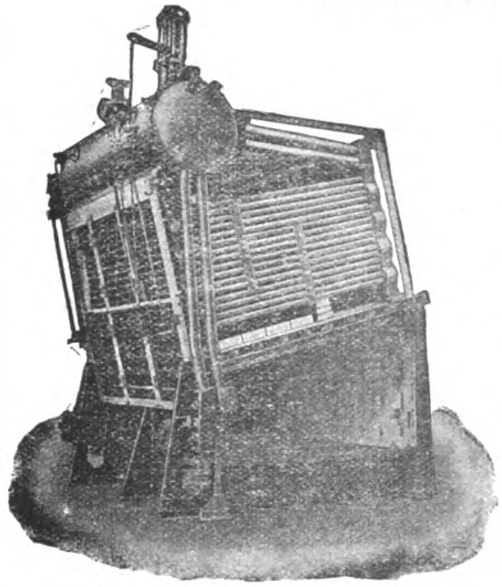

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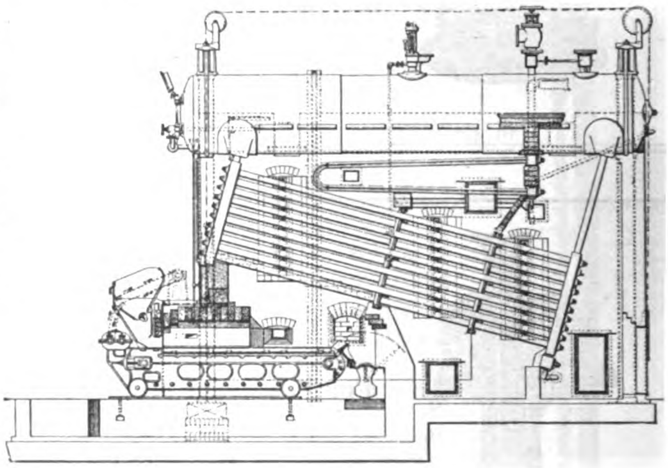

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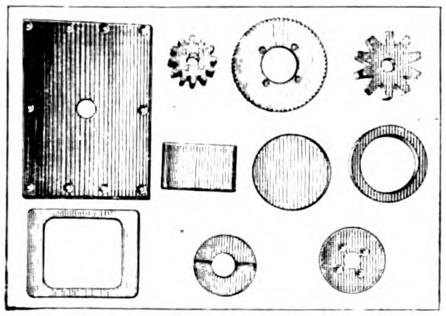

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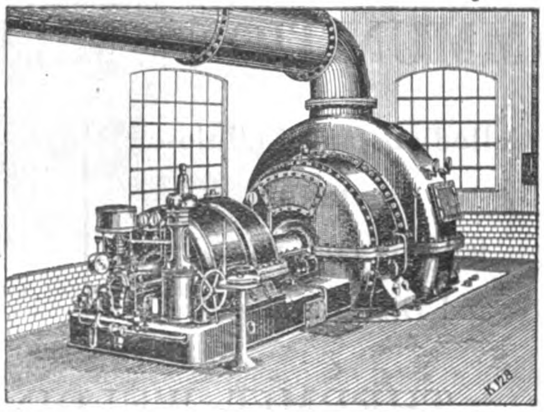

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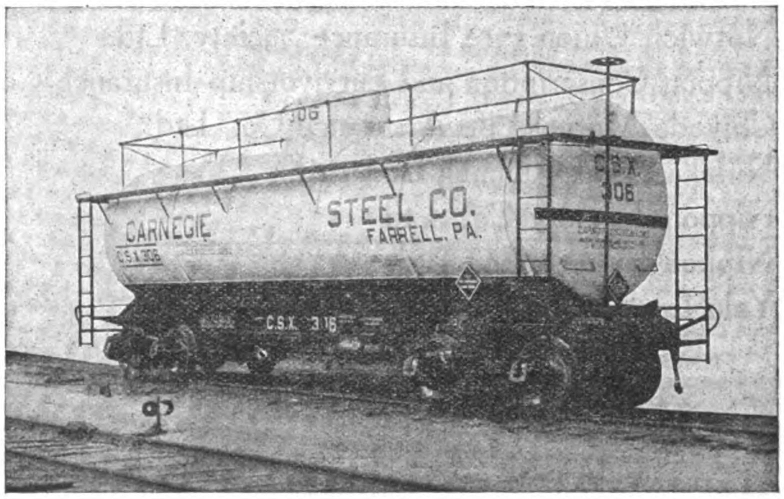

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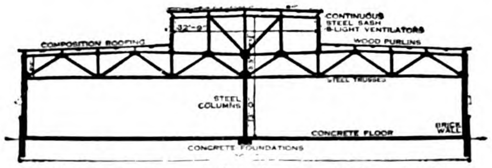

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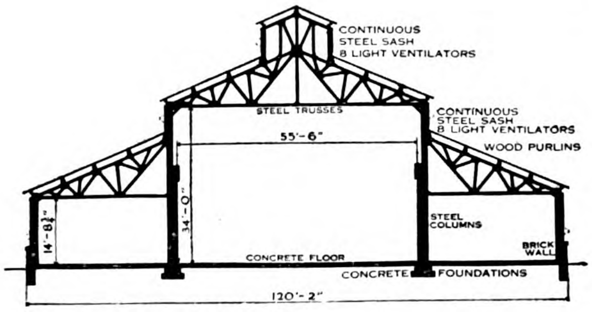

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The list of Austin clients includes such internationally known concerns as Standard Oil Co., General Electric Co., American Locomotive Co., International Motor Co., Packard Motor Car Co., Pilkington Bros., Limited; Industrial Works, Morgan Engineering Co., Nordyke & Marmon, Cope Explosives Co. Ltd., Cuban Carbonic Co., Log Supply Co., Ltd., Sherwin-Williams, and many others of equal reputation.

Why not take up your building problems with an Austin Company engineer? Whether you cable or write, be sure to ask for the Austin Book of Buildings.

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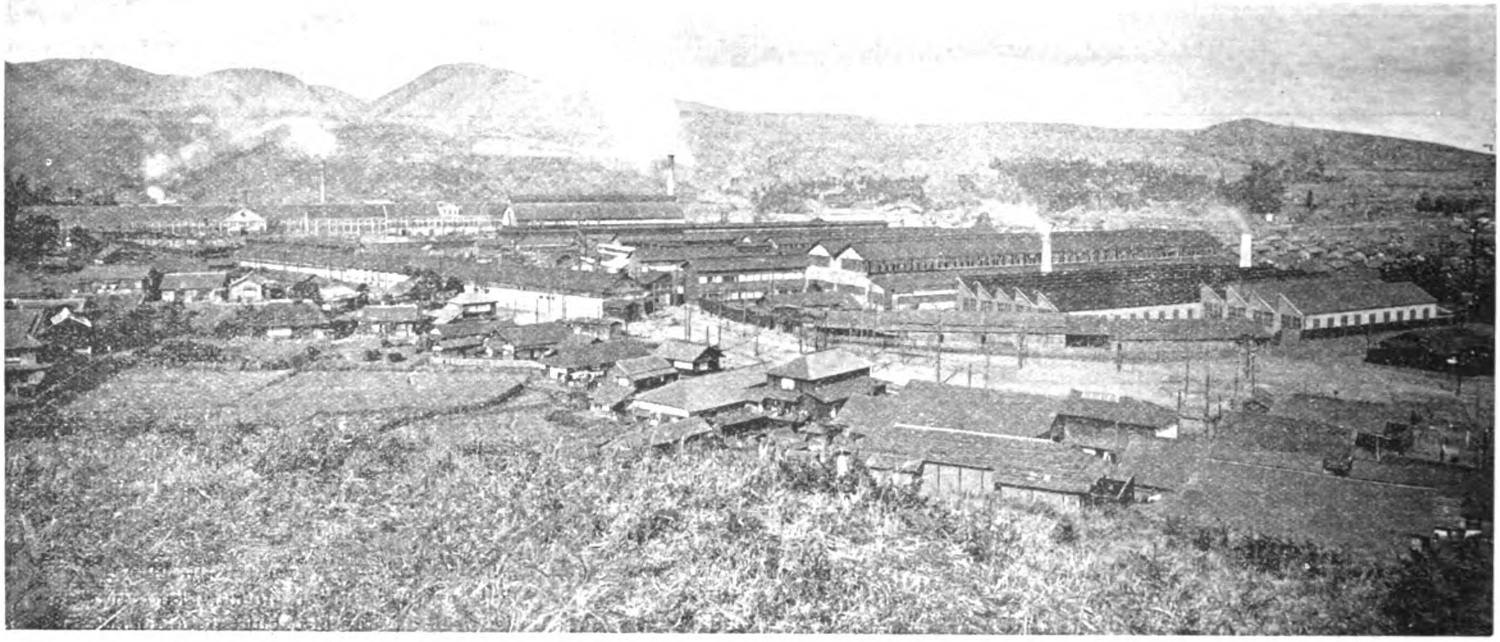
DESIGNED BUILT AND EQUIPPED

HIDACHI ENGINEERING WORKS



GENERAL VIEW OF HIDACHI ENGINEERING WORKS

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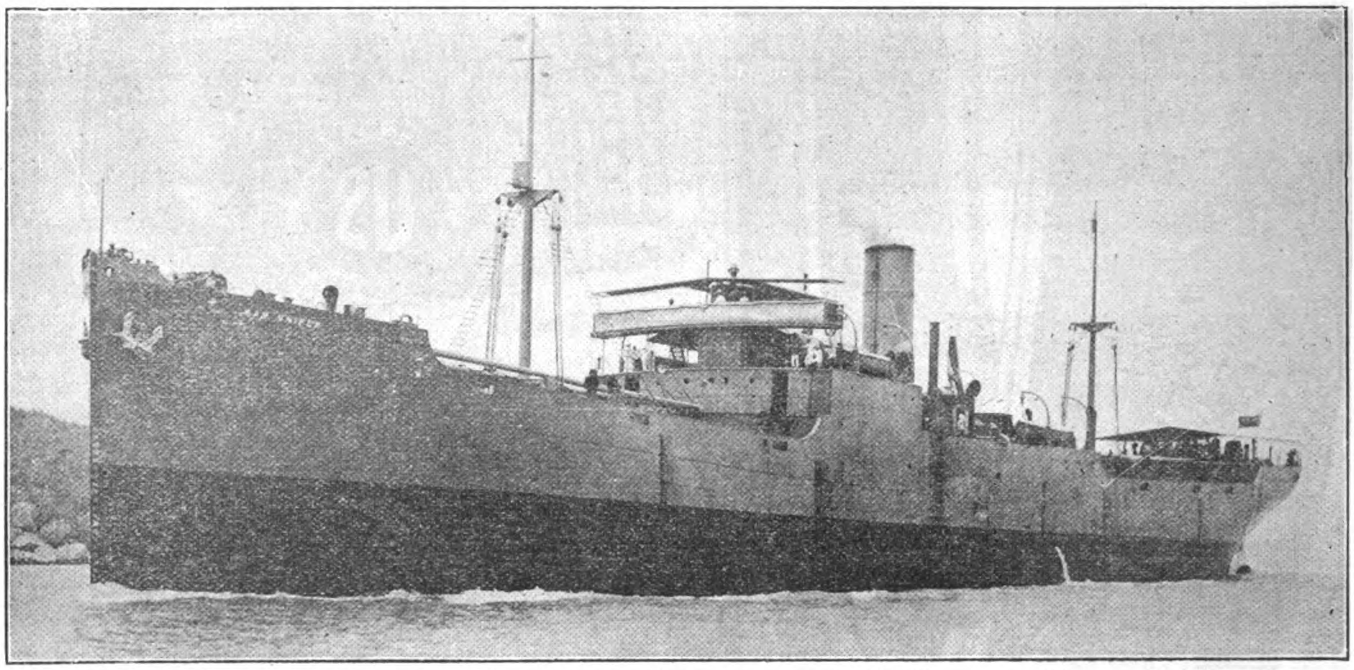
Dock Owners, Ship Builders, Marine and Land Engineers, Boiler Makers, Iron and Brass Founders, Forge Masters, Electricians

The Company possesses Six Granite Docks and Two Patent Slipways and these are Equipped for Expeditious Work. The Plant is of the most modern type throughout. Ship Owners and Captains are assured that Docking and Repairs are carried out Promptly and at Moderate Charges.



S.S. "*WAR SNIPER*," 8,200 tons d.w.—5,175 tons gross. Built and engined by The Hongkong & Whampoa Dock Co., Ltd. to the order of the British Government.

Address Enquiries to the Chief Manager, R. M. DYER, B.Sc., M.I.N.A., Kowloon Docks, Hongkong

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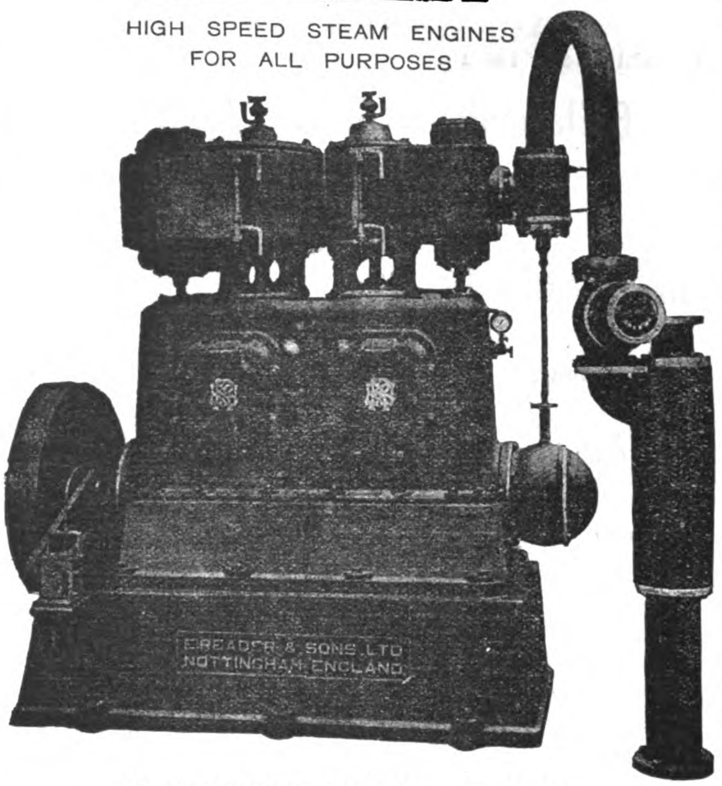

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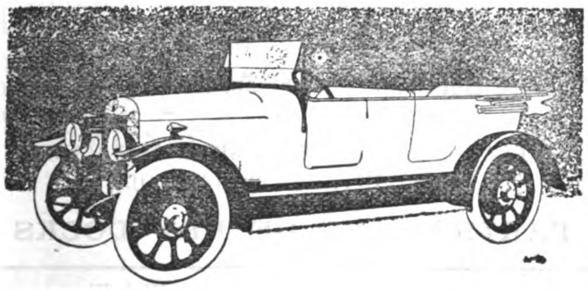

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EVERY PART IN THE 15·9 h.p. Arrol-Johnston car chassis is standardised to Aircraft Gauges. Every bar and ingot of material passes stringent laboratory and physical tests.

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The Shanghai Dock and Engineering Co., Ltd.

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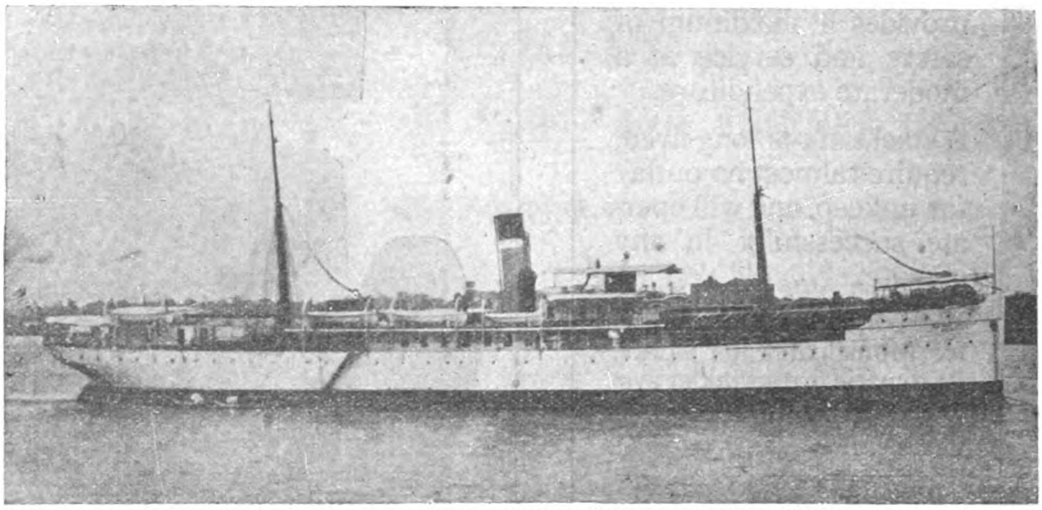

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The Dock charges are the most moderate in the Far East.

The Company's Yards and Docks cover 96 acres. The Water Frontage is about 1½ miles in length. Wharves and Pontoons are arranged where steamers can moor during repairs ; and slips for hauling up small vessels are provided. Sheer legs capable of lifting 65 tons are placed at the various Docks.

The extensive Shipbuilding yards and workshops, lit by Electric Light, are provided with the latest improvements, such as travelling cranes of 60 tons' capacity, hydraulic and pneumatic machinery and tools.

Light railway lines are laid throughout workshops and yards.

A Staff of Divers, and powerful salvage appliances, and Floating Cranes ready for any emergency at short notice. Enquiries immediately attended to.

Estimates given for all classes of work : Coast Steamers, Side and Stern Wheelers, Tugboats, Launches, Steam Barges, Dredgers, Floating Cranes, and Lighters a speciality.

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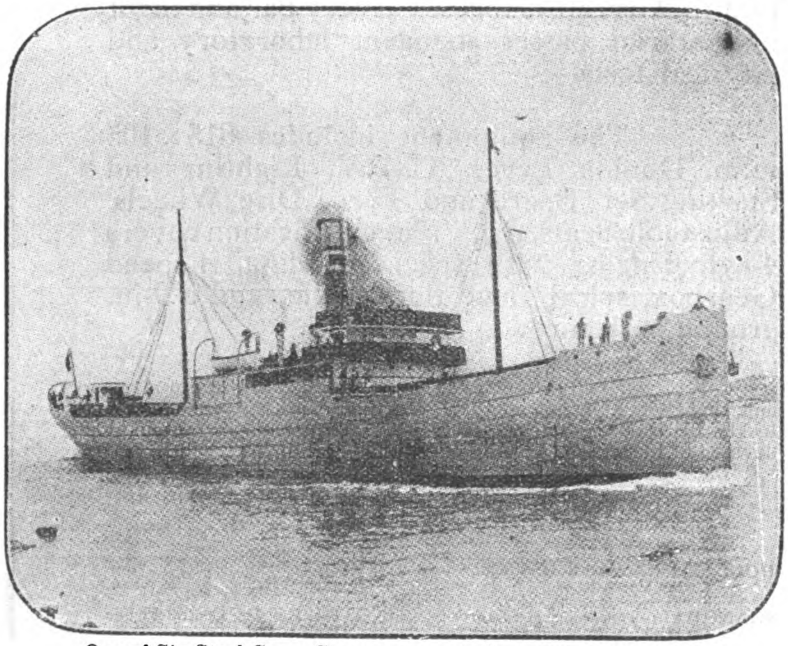

One of Six Steel Cargo Steamers presently under construction.

CALL FLAG FOR VESSELS IN SHANGHAI HARBOUR
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Names	Length on Blocks	High Water	
		Breadth of Entrance	Depth of water on Sill
Cosmopolitan Dock ...	532 feet	77 feet	24 feet
International Dock ...	528 ,,	77 ,,	23 ,,
New Dock	450 ,,	74 ,,	21 ,,
Old Dock	399 ,,	53 ,,	16 ,,
Tunkadoo Dock ...	350 ,,	67 ,,	16 ,,

Berths for Building Steamers up to 10,000 tons Deadweight Capacity.

Representatives and workmen attend vessels at Woosung and outports on request.

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THERE is a Williams' Superior Drop-Forged Wrench for every nut and bolt—large or small, thick or thin.

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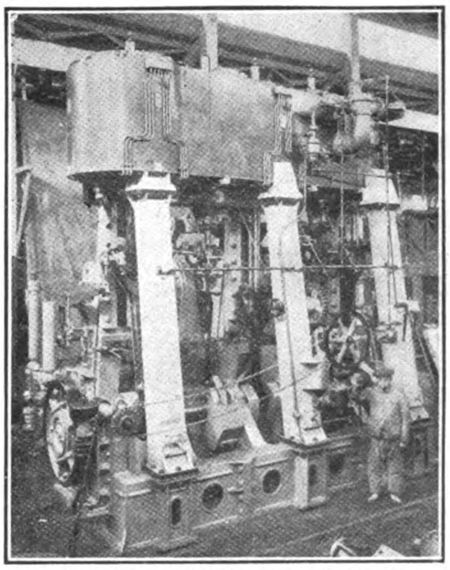

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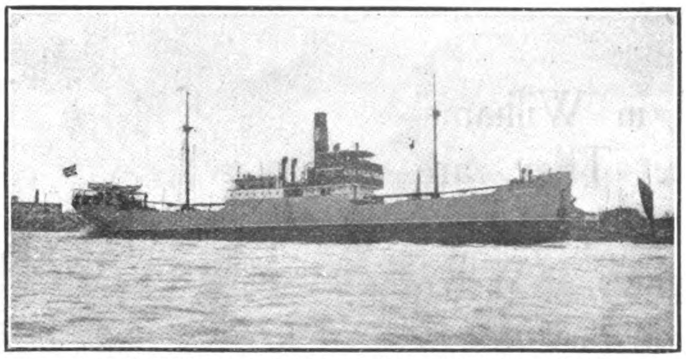

S.S. "Halvdan," one of 8 Steamers Built and Engined at Works

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Steam or Motor Driven

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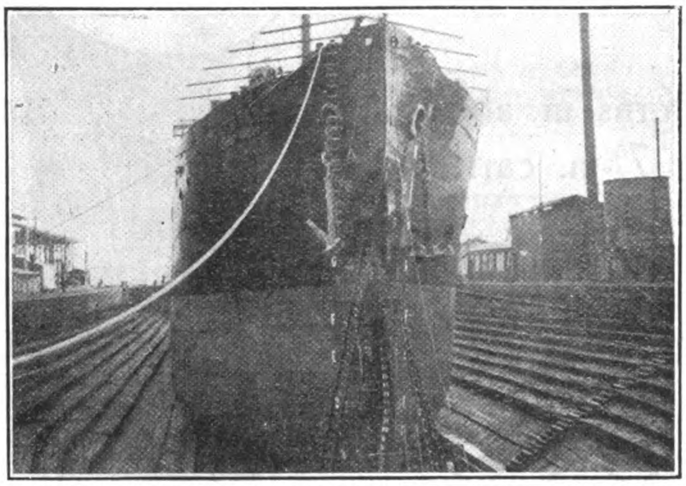

7,000-ton Steamer Docked for Repairs of Damage Sustained in Collision

DOCK PROPRIETORS

Yangtszepoo Dock

Length	577'-0"
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Width of Sill	60'-0"
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Patent Slips

for vessels up to 200-ft. long

Vessels docked promptly

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Moderate Charges

Vessels undergoing repairs accommodated at wharves alongside Works.

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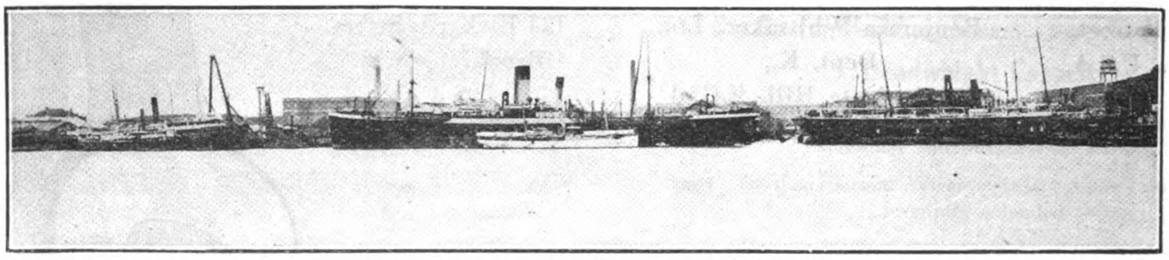
Salvage Experts, Divers and a comprehensive Salvage Plant. Floating Cranes to lift 50 tons and Sheerlegs to lift 80 tons.

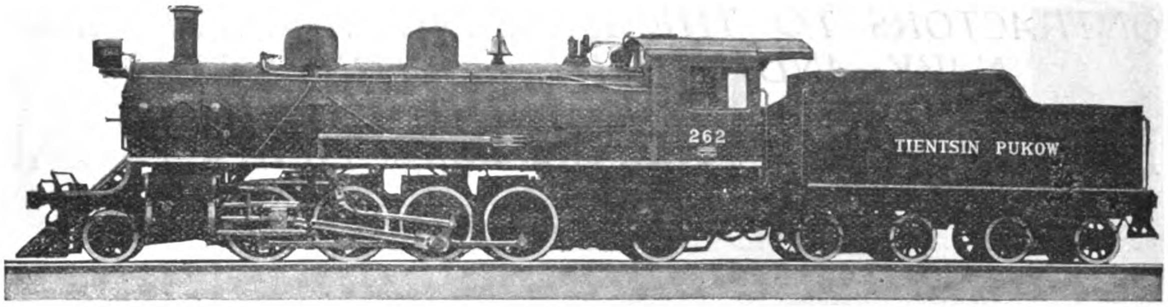
THE PROPERTY OF THE COMPANY COVERS AN AREA OF ABOUT 40 ACRES with a RIVER FRONTAGE of 1,800-ft.



General View of Works from River Side

Showing 8 Steamers Berthed Alongside Undergoing Repairs.

NEW POWER



BUILT FOR THE TIENTSIN-PUKOW RAILWAY

Total Weight of Engine, 198,000 pounds; Weight on Drivers, 142,500 pounds; Diameter of Drivers, 54 inches; Boiler Pressure, 200 pounds; Cylinders, 20 X 28 inches; Maximum Tractive Power, 35,300 pounds.

The Tientsin-Pukow Railway is a north-and-south line in China. The north-end at Tientsin connects with the Peking-Mukden line. The south-end terminates at Pukow, across the Yangtze River from Nanking, at which point ferry connection is made with the Shanghai-Nanking line. At Tsinanfu connection is made with the Shantung Railway, and at Hsuchowfu connection is made with the Pienlo System.

The distance from the central station at Tientsin to Pukow is 627 miles. In addition there are branches to mines and canals amounting to 60 miles.

Twenty Mikado type locomotives, above illustrated, were recently supplied by the American Locomotive Company. The design, representing the best American practice, was worked out in conjunction and cooperation with Mr. J. Alston, Locomotive Superintendent of the Railway.

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CARGO BOATS
MIYABARA'S PATENT WATER TUBE BOILERS
DREDGES OF ALL KINDS
TSUTSUMI'S PATENT DOUBLE ACTING AIR PUMPS

DRY DOCKS:	No. 1,	500-ft. long;	70-ft. wide;	35-ft. deep.
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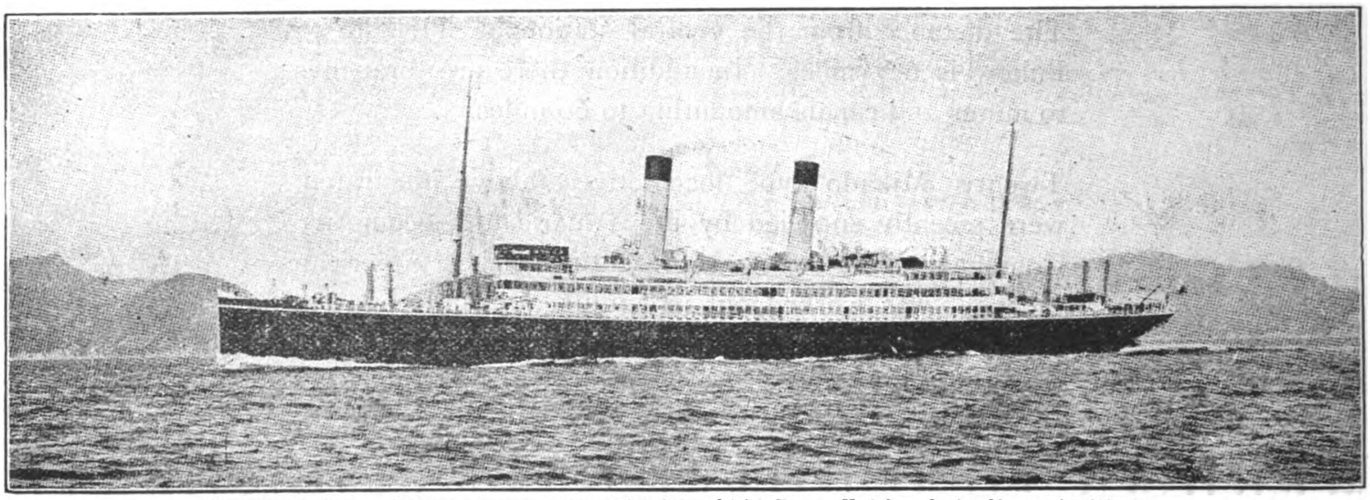

The *Tenyo Maru*, built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

MITSUBISHI ZOSEN KAISHA, LTD., NAGASAKI WORKS

(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

DOCK No. 1

Extreme Length	523	Ft.
Length on Blocks	513	,,
Width of Entrance on Top	89	,,
,, ,, ,, ,, Bottom	77	,,
Water on Blocks at Spring Tide	26½	,,

DOCK No. 2

Extreme Length	371	Ft.
Length on Blocks	350	,,
Width of Entrance on Top	66	,,
,, ,, ,, ,, Bottom	53	,,
Water on Blocks at Spring Tide	24	,,

DOCK No. 3

Extreme Length	728.9	Ft.
Length on Blocks	714	,,
Width of Entrance on Top	99½	,,
,, ,, ,, ,, Bottom	88½	,,
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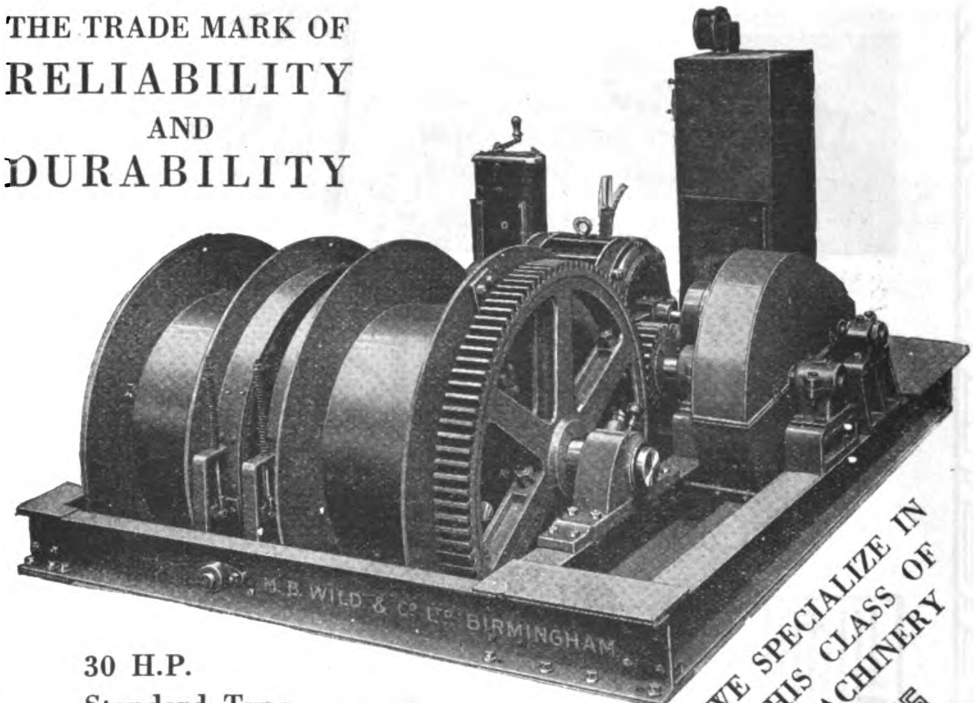

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DRY DOCKS:

No. 1	625′ × 80′ × 28′
No. 2	380′ × 50′ × 26′
No. 3	480′ × 63′ × 21½′

SHIPBUILDING BERTHS.

No. 1	400′ × 27′
No. 2	490′ × 30′
No. 3	580′ × 36′
No. 4, No. 5	680′ × 38′

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Iron Building	8,871.57
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All situated in Yokohama Harbour, the First Port at which Trans-Pacific Steamships arrive, and the Last Port from which they depart.

Complete Facilities for every Work and Fully Equipped up to date for

All Repairing Work. All Engine Work. All New Ship Work. All Boiler Work.

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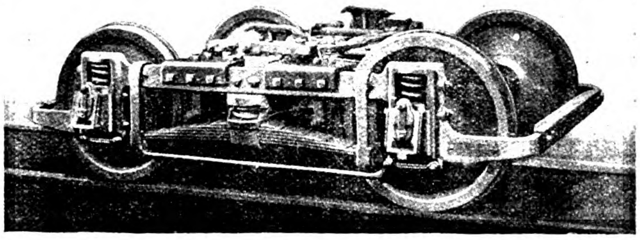
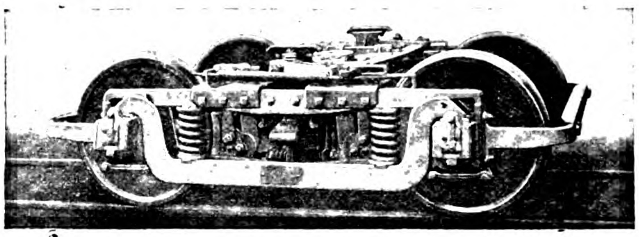
One 200-ton Floating Crane and Cranes of Medium Capacity

Brill Tramway Trucks for Fast Service



Brill Truck No. 77-E



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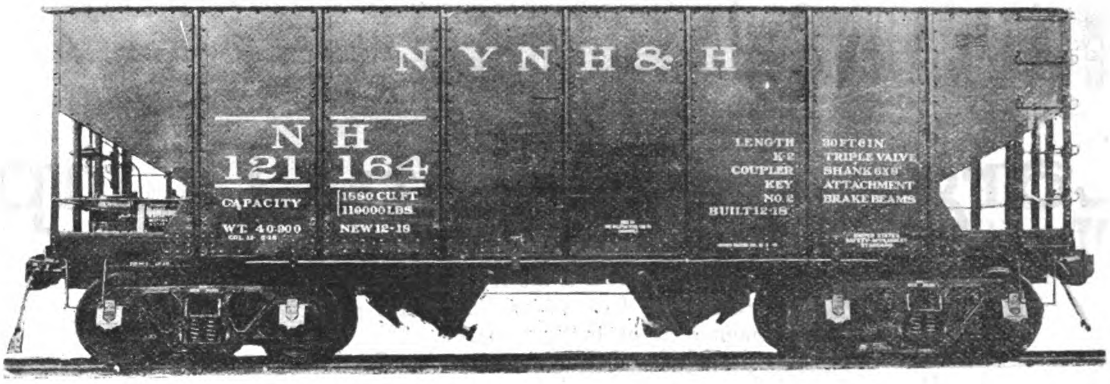

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KYODO UNYU KAISHA
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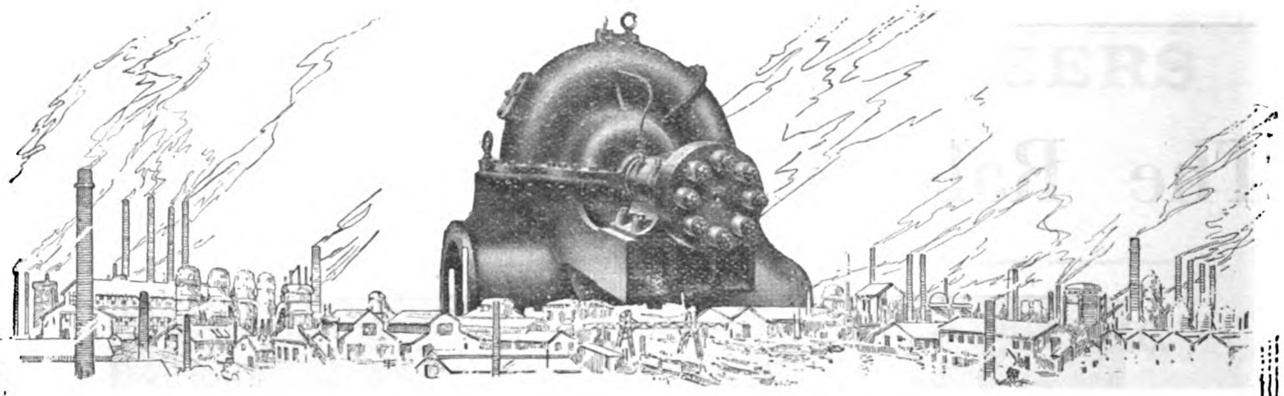
3 KAIGAN-DORI, ITCHOME
YOKOHAMA
WITH TWO BRANCHES IN TOKYO



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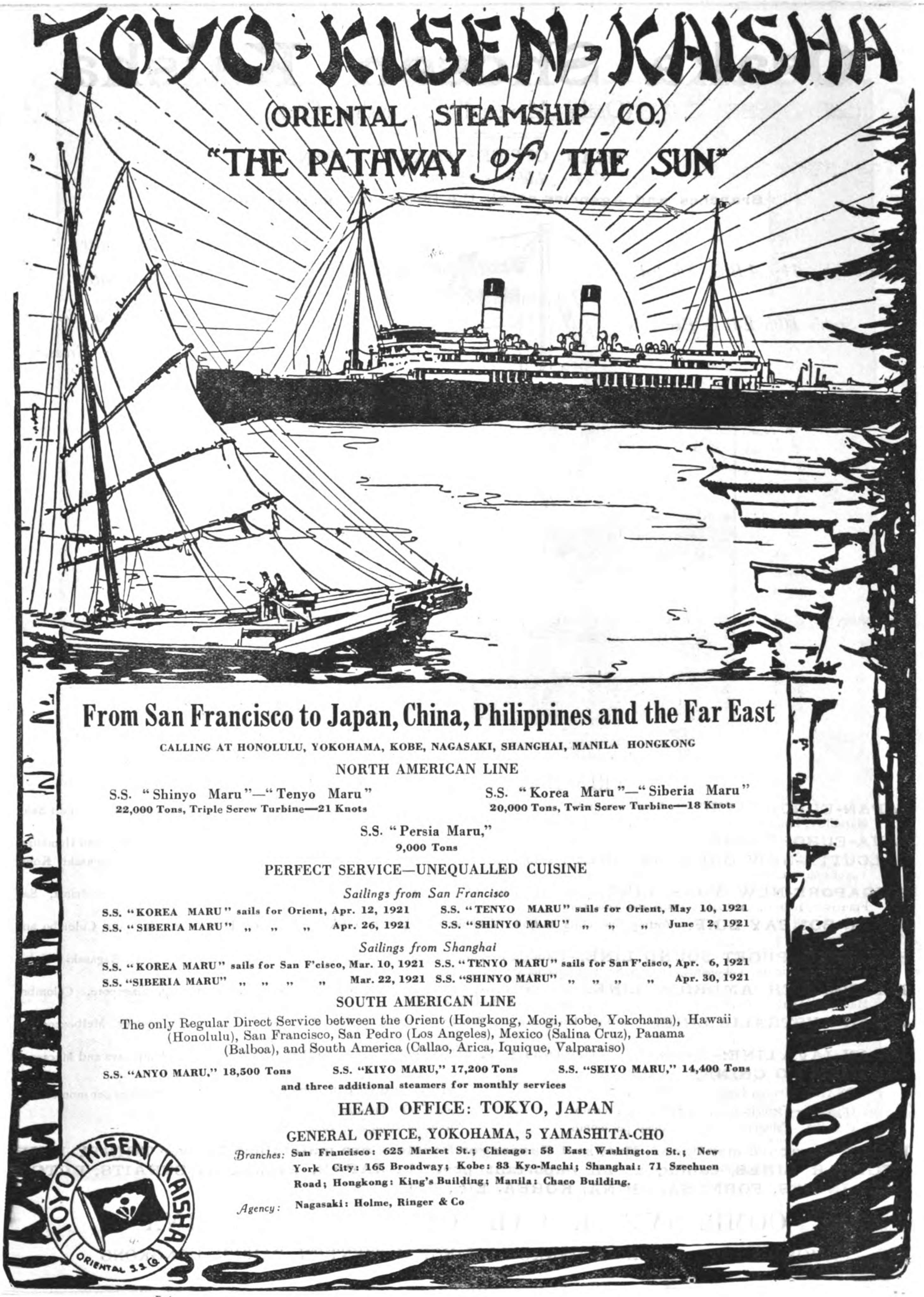
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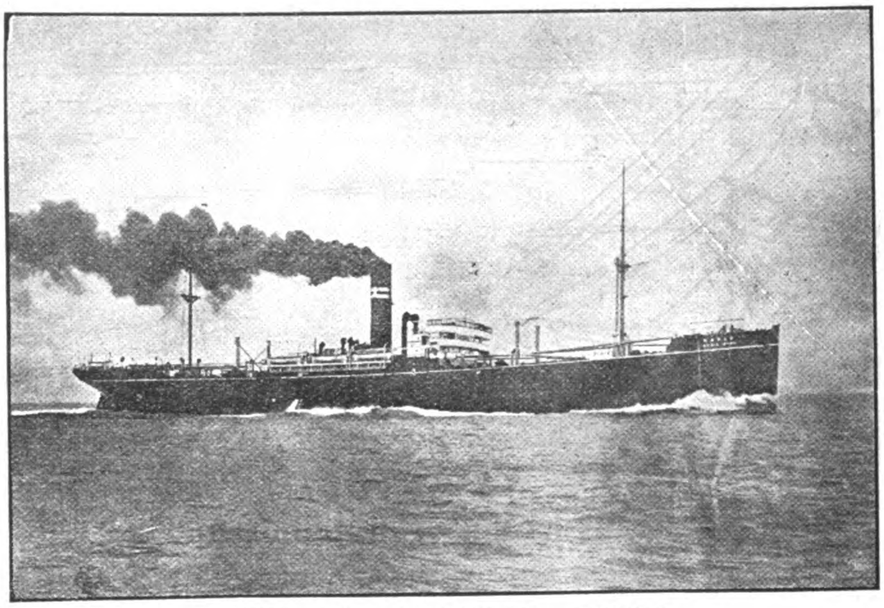

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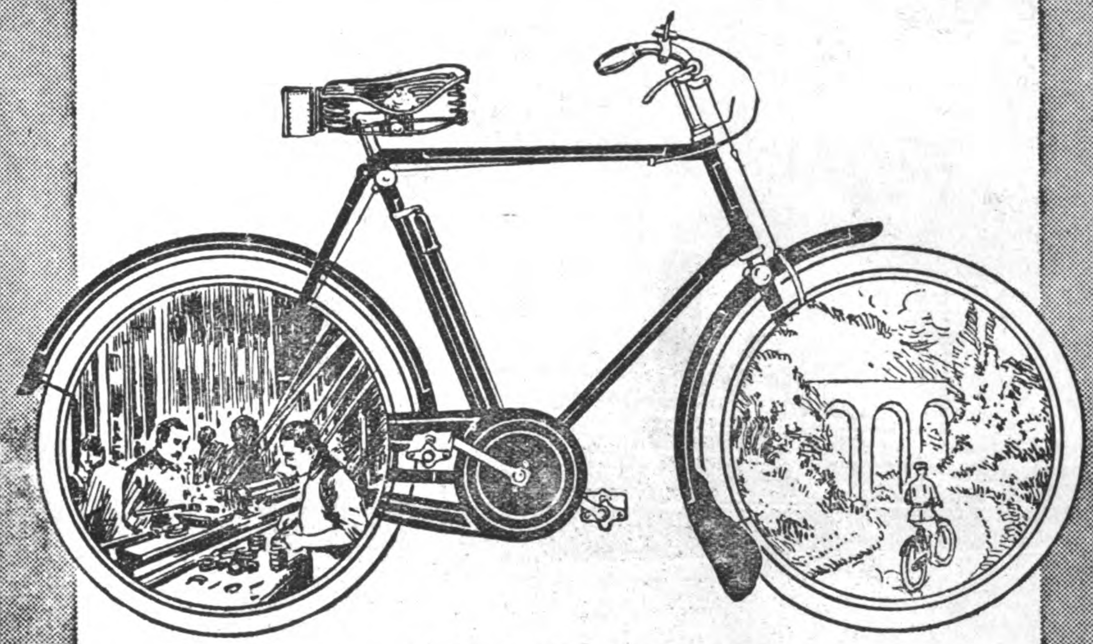

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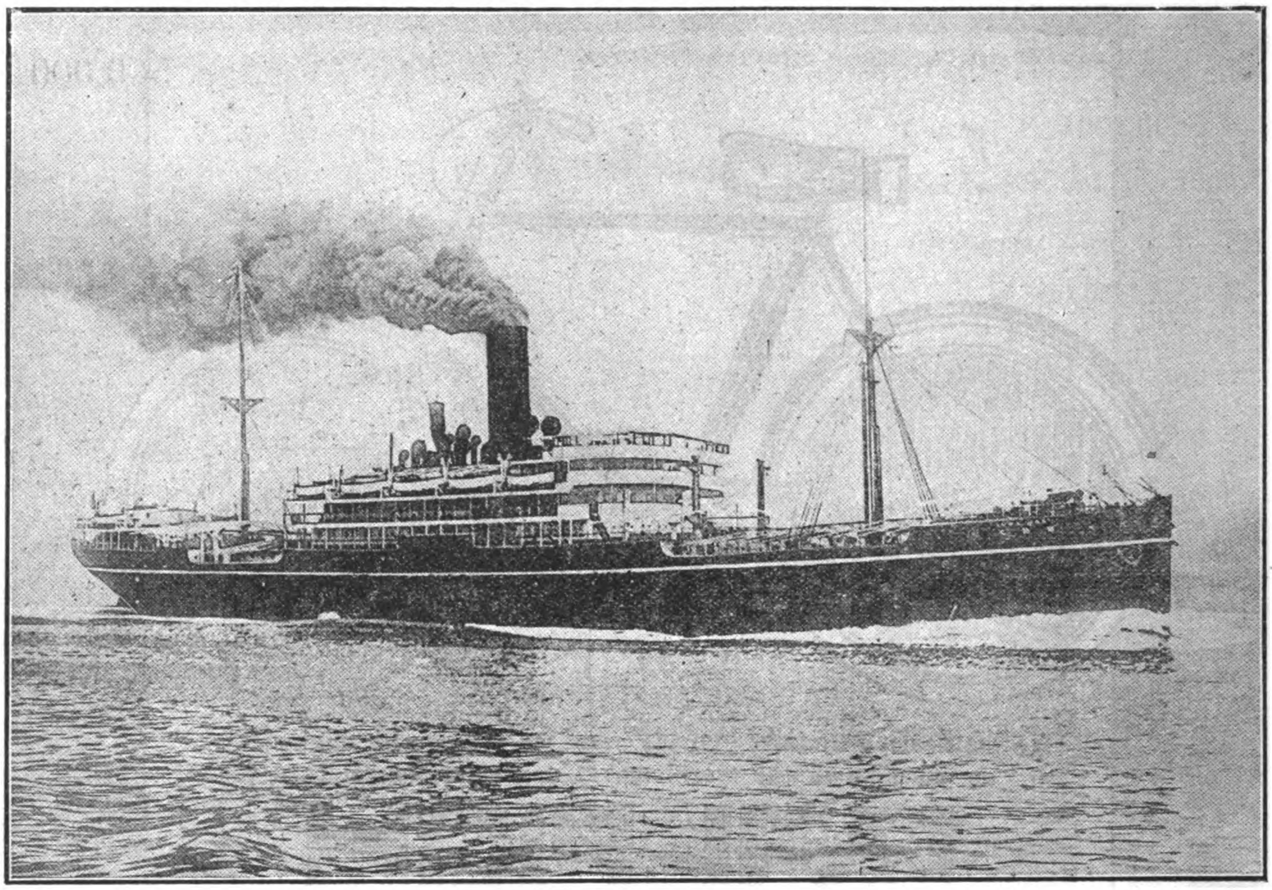

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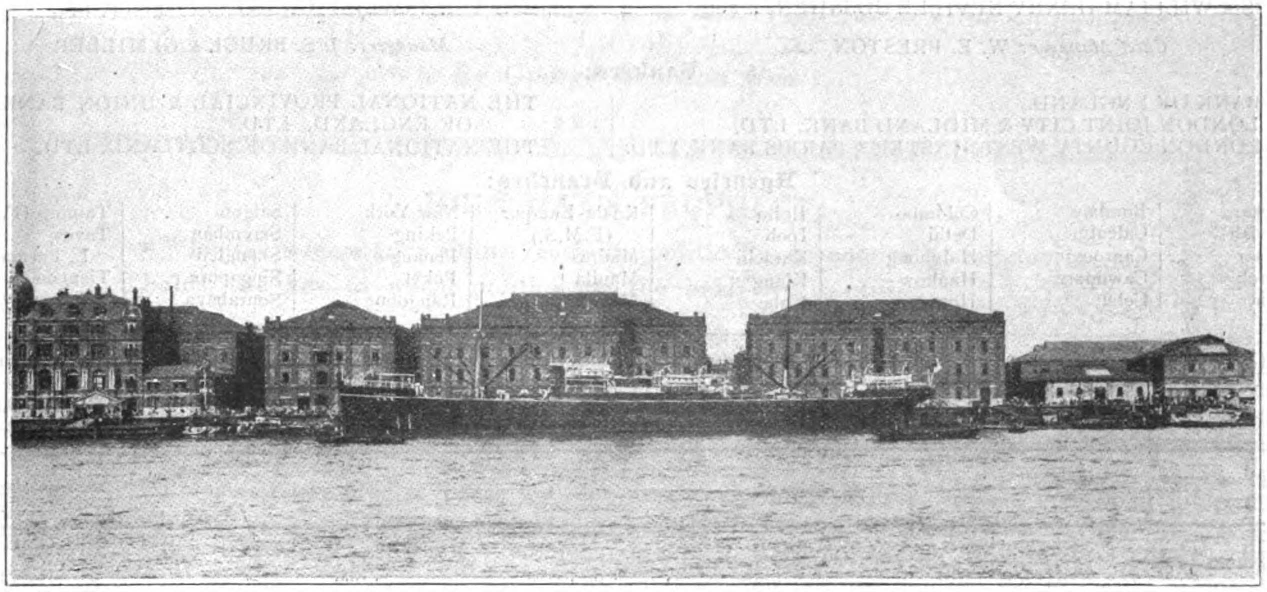

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVII SHANGHAI, MARCH, 1921 No. 3

THE ROAD TO GOOD UNDERSTANDING

By George Bronson Rea

JOHN HAY'S PROPHECY:

"Whoever understands China—socially politically, economically, religiously—holds the key to world politics for the next five centuries."

EIGHT years of idealism and refusal to face the facts or listen to wise counsels has brought its inevitable result. It is useless and wearisome to hold an inquest into the errors of diplomacy which have permitted the United States to drift stern first into the treacherous waters of Far Eastern intrigues. If the new administration is seeking light on these matters, Congress, with great profit to the country and our international relations, might appoint a special investigating committee to inquire into the responsibility attached to these errors, or, perhaps it would be more charitable and benefitting our national dignity to permit these dead issues to remain buried, and start afresh with a new outlook and an honest determination to employ our powerful influence to bring about a settlement of the great and complex problems which make for an upheaval in the Far East.

We stand to-day at the threshold of that Pacific Era so prophetically visioned by John Hay twenty years ago, but have failed to heed his counsel. If we except Ambassador Morris, who has lived up to the highest traditions of American diplomacy, the nation has not developed one practical Far Eastern Statesman to help guide it along the right path. We have been driven and led this way and that like sheep under the prodding or pleadings of dollar-diplomats, sentimental statesmen, petty politicians, paid propagandists, and concession seekers, all striving to mould the policy of the government to their own selfish ends. IT IS TIME TO CALL A HALT.

We cannot afford to make any more mistakes. We are facing a serious crisis in our Far Eastern policy. We cannot continue safely to concentrate our diplomacy in these regions against that of Japan. There is only one safe and sane road for us to follow. We must face the new Pacific Era with a full and accurate knowledge of what lies before us. The nation must know the truth.

On three occasions, when confronted with grave Far Eastern issues, President Wilson, through the state department, promised the nation he would call a conference to take up the whole case of China, and then at Paris, forgot his promises and concentrated the fire of the American delegation upon Japan. Hence the Shantung question, with its aftermath of ill-feeling and unrest throughout the East. For reasons best known to himself, and against the advice of the highest authority in the American army, President Wilson insisted upon joint intervention and the dispatch of an American force into Siberia. Hence, the Siberian imbroglio, and the intensification of feeling between Japan and America.

President Wilson withdrew support from the American Group in 1913, because the terms of the loan then under negotiation seemed to be subversive of China's administrative independence. In 1914, he faced around and denied to China the exercise of her sovereign rights to construct her railways in her own way. In 1917, he initiated the movement for the organization of a new international financial consortium to do the very things he condemned in 1913 and 1914. The situation in China is far more serious than it was in 1913. If the consortium fails to function, conditions will become intolerable, and we will once more face the doctrine of the closed sphere, be compelled to give effect to our conception of the Open Door doctrine.

We cannot continue to drift. The time has arrived for an understanding. The European Powers are war-weary and in no mood to prolong a dangerous situation. China turns to us for friendly advice and assistance. Americans led her to defeat at Paris, and have done nothing to remedy matters except to hand over her troubles to an international financial syndicate. America has applied the paper doctrine that Mongolia is an "important part of China." The War Participation Pact which brought Japan and China together for common defense against the spread of Bolshevism in these regions has been cancelled. As a result, we have the picture of Urga in the hands of Ungern, and ten thousand peaceful Chinese reported massacred. If the memoirs of the late Willard Straight printed in the February number of "Asia" can be accepted as the truth, then our activities in these regions originated in the desire of Mr. Harriman to control a round-the-world transportation system, and the Chinchow-Aigun railway contract was conceived in order to compel Japan to sell out the South Manchuria line. As a result, Japan's position in

South Manchuria lies open to a menace from the direction of Urga on its one exposed flank.

President Wilson further insists that the integrity of helpless Russia shall be preserved at a time when it is obvious that Japan is seeking to check the spread of Bolshevism in Siberia by following the identic methods applied by other Powers in Europe for their own protection. The powers answer by recognizing the independence of Latvia and Esthonia, while Premier Hara declares in the Diet that Japanese troops must remain in Vladivostok and along the railway to Harbin, for the protection of Japanese residents. The situation is far from being cheerful. On all sides black clouds cast their ominous shadows.

China is helpless. She looks to America for a Square Deal. Japan, beset with difficulties, is also hopeful and trustful that when her full case is known, she also will receive a measure of sympathy and due justice from the other Powers. Let us face the situation like men and seek for light and knowledge in a general international convention where *all* sides of the questions can be fully and amicably discussed. Peace in the Pacific will never survive the strain of another attempt to convert an international conference into a court for the trial of Japan. She has a case, one that must be heard. Let us be fair to China and just to Japan. Let us get together and permit the cases of these two countries to go before the world. Then, and only then, will we be able to see behind the screen of secret and confidential propaganda and the arguments of selfish and special interests, and behold the road that must be followed in the future.

THE ROAD TO PERMANENT PEACE IN THE PACIFIC, TO A MUTUAL UNDERSTANDING OF PACIFIC PROBLEMS LIES IN THIS DIRECTION.

Sound Sense from Seattle

SEATTLE, Jan. 19. Expressing the wish that Seattle could become a silk manufacturing centre, thereby making possible cheaper costs of silk on this coast by saving transportation to the East and back, S. Endo, president of the Gunze Filature Co. and chairman of the Japanese silk commission, told the chamber of commerce that silk manufacture here is surrounded by ideal conditions. The speaker said 80 per cent. of the silk consumed in this country comes from Japan and 60 per cent. of it is sent through the port of Seattle.

Judge Thomas Burke said the time had come for soberminded men of Japan and America to get around a table, put all their cards face up, look at the situations now causing distrust in both countries and then decide on the basis of even handed justice.

"Seattle, nearest American city to the Orient, has lived in peace for twenty-five years with Japan, a neighbor. There are hot heads in Japan as well as in America," he said. "It is a crime to-day to talk race hatred, which with religious hatred, has been the cause of almost every war. There is no difficulty which cannot be solved and solved right, if we use sober judgment. I am convinced that the wrong way to get a settlement is by abuse and insult. In both countries we should work for more than mere abstinence from war; we should learn to know the other nation.

"Seattle should not forget that when our own government failed to give us ships to give us world commerce, when American companies were operating from other ports on this coast that it was a Japanese steamship line which acted as handmaid for our commerce. It put us on the world's map."

Blunt Words from Britain

UNDER the title of "Japan Must Speak Out" the *Manchester Dispatch* of January 14, says editorially:

"To-day we print in another column a striking article by Commander Rundle, R.N., the naval expert, who asks the pertinent question: Shall history be allowed to repeat itself?

"Our contributor has been studying the strategic potentialities and political perils of the Pacific, and he has come to the conclusion that unless diplomacy acts energetically and at once we are heading straight for an early war, which will be as devastating and disruptive as the Great War of yesterday. He puts the question plainly to the directors of foreign policy: What are you going to do about it? The fighting man warns the politician!

"The issue is one which directly concerns the welfare of every man, woman, and child in this country. Lord Derby had the true vision of statesmanship when he recently reminded us that times had changed, and urged the man in the street, in his own interests, to watch foreign policy.

"Japan has come to the conclusion that she must expand. To blind our eyes to that fact is to court disaster. If we do admit this fact, what steps are to be taken to satisfy her aspirations? A bold plan is needed, and a conference must be called to devise one. If we let matters drift we shall be compelled to embark on a huge naval programme. With Japan satisfied the way would perhaps be paved for a naval understanding with the United States, who then might be all the more ready to admit Great Britain's paramount need for sea supremacy. A simple question must, therefore, be put to Japan now: What do you want?"

Hammond Knows

According to a recent message from Washington, Mr. John Hayes Hammond, who is familiar with affairs in Russia, testifying before the House of Representatives, said "there is no necessity for us of giving California as an outlet of aliens. Should Russia give Japan the vast territory (Siberia) for her colonial development, all the questions would be settled. Russia acquiring a large sum from the sale, can build a new railway to China. Thus all the countries concerned will be greatly benefitted, America likewise being released from the troublesome complication. The downfall of the Soviet government is not far off. It is advisable for America to turn her attention towards Mexico and South America instead of Russia."

Cost of Flying

Interesting Figures

IF the elements of risk in itself did not cause a reluctance on the part of the ordinary land-lubber to trust either himself or his property to the caprices of the air and of the aeroplane, it is as yet unproven to him that the cost of air passage is unprohibitive. A flight to Paris from London has in the past been the pleasure, or alarming adventure, of those whose purse permitted, at least, so it would seem. Controversy does exist over the fact that air passage either of human or dead freight is at the present time abnormally high. A writer, Major W. T. Blake, in a recent periodical, maintains that those who might be in a position to answer the question as to how much it actually does cost to fly have remained silent. He states that vague estimates range from 3/6 per ton mile to about £2.10 per ton mile and that the public has been led to understand that a fair mean is about 30/- per ton mile. After repeatedly questioning this, and considering every possible cost, the writer states that this estimate is excessive. Gratifying to him and no doubt to all whose trepidation as to air passage is not such as to invite a nervous breakdown, comes some detailed figures from Capt. Acland, the head of the aviation department of Messrs. Vickers, Ltd. The figures show that the actual cost of flying, including fuel, wages, repairs, renewals and upkeep, depreciation, sundry expenses, and insurance, works out at 10s. 6d. per ton mile. The "Vimy" type as was used in crossing the Atlantic proved the instrument on which the test for figures was made.

The Real Significance of the Consortium

Japan's Great Sacrifice in the Interests of World Peace

THE outstanding feature of the long-drawn-out consortium negotiations is the firm stand taken by Japan in defending her economical and strategical position in Manchuria and Inner Eastern Mongolia, and the final arrangement whereby her bankers entered the combination on a basis of equality with the other powers, while still retaining control over lines and extensions *upon which substantial progress has been made* and surrendering her most important strategic railway to advance the cause of world peace.

The vital necessity of Japan to preserve her position in this part of Asia against the never changing policy of Russia has been fully explained in the columns of THE FAR EASTERN REVIEW. Under the title of "The Origin of China's Modern Troubles," this situation was clearly set forth in the January, 1921, number of this publication. It is impossible to intelligehtly grasp the arguments in support of Japan's national policy without the background provided by the above exposition of facts, and once they are understood the prevailing ideas about Japan's militarism and ambition to conquer or dominatě China and encircle Peking with a network of strategic railways, must give place to a proper and more sympathetic appreciation of her vital necessity of preserving her national existence against the "come-back" of Russia.

When the new consortium idea was originated in 1917, the existence of the Li-Lobanoff Secret Alliance between China and Russia was still a secret, hinted at but vaguely in French diplomatic memoirs and other state papers. It was not until the Peace Conference that the Russians openly acknowledged the existence of this instrument, and then only to support certain rights in Manchuria. Other important facts concerning Russia's activities and policies in Eastern Asia were also revealed for the first time during the Peace Conference. Notably amongst these were the revelations of Mr. E. J. Dillon in his book, "The Eclipse of Russia," containing amongst other things, the inside history of the events leading up to the German occupation of Kiaochau. We also learned then of the existence of the secret agreements concerning Shantung entered into by Great Britain, France, Russia and Italy to support Japan's claims. All of these facts loudly proclaimed that the position of Japan in Manchuria and Mongolia could not be discussed from any idealistic viewpoint, or made to conform to President Wilson's program for ushering in a new era. The stern realities of the intense play of national and racial forces operating in these regions forbade any meddling by well-intentioned statesmen with the moves of Japan to preserve her independence and security against the intrigues of a combination formed to accomplish her ruin. The facts, thus brought to light, convinced intelligent students of the situation that nothing but direst necessity compelled Japan to retain her strategic foothold in this section of China, in order to combat step by step the underhand moves of Russia to outflank and destroy her. This has special reference to Japan's interest in the Taonan-Jehol Railway and its outlet to the sea, which has been cited as proof positive of her sinister designs upon Peking and evidence irrefutable of her program of "military aggression." Facts which Japan has been prohibited from inviting special attention to for fear of exposing her program to Russia, together with events which permit us to entertain no illusions, must however dispel from the minds of all right-thinking people, this distorted conception of Japan's alleged double-dealings. A careful analysis of the facts will prove to the satisfaction of any impartial mind that Japan's interest in Inner Mongolia came as a direct result of Russia's annexation of that territory in 1912, followed by the immediate opening of negotiations in Paris to obtain the funds required to press forward her strategic railways in this region and so bring her armies nearer to Peking and enable them to approach Japan's position in Southern Manchuria from her unprotected flank. China's continued unrest, disorganization and general helplessness, made it imperative upon Japan to take immediate and energetic steps to safeguard her menaced position. On the other hand there entered her obligations under the Alliance with Great Britain. All evidence points to the fact that in 1912, Russia was preparing for another of her forward moves. At the time that she was amputating Mongolia from China, she was secretly pushing ahead her new military railway from Bokhara to the Afghan frontier. Evidence surrounding this forward move has come to light. So not only for her own protection, but to comply with her obligations to her ally, Japan was compelled to extend her influence into regions where she could more safely hold in check the coming menace.

The consortium negotiations reveal that the powers failed to fully sense the real reasons for Japan's tenacious insistance upon recognition of her "special rights" in these regions, and ignored the cardinal feature of all China's past railway agreements, i.e., it is impossible to dissociate these seemingly innocent economical loans from international politics. The mere fact that a new international consortium was being organized to pool all these concessions, rights and options, and in which Russia was conspicuous by her absence, was, in itself, sufficient justification for Japan to watch carefully her step, and while accepting the principle of the proposition, to insist upon the acceptance of reservations which would permit her complete liberty of action if it ever became necessary to defend her existence.

Japan's reluctance to accept off-hand America's ideas concerning the pooling of all railway and industrial rights and options must be viewed in the same light and from the same angle that now divides the American people on the merits of the league of nations. From our safe position, five thousand miles across the Pacific, Americans can readily assume an altruistic attitude and adhere to lofty principles in the application of traditional policies towards China and Russia. Whatever happens, the people of America will not be called upon to pay the price. These burdens will all be piled upon Japan, the least able to stand them. If the American people had the slightest idea they might be called upon under the operation of the consortium agreement to send an army across the Pacific, in all probability, they would have scrutinized the consortium negotiations as closely as did Japan, and demanded certain reservations such as they now insist must be written into the convenant of the league. That these questions have not been asked by the American public is due entirely to the fact that the administration learned well the lesson of the dangers attached to open covenants openly arrived at, and surrounded the consortium negotiations with the utmost secrecy. All of which has been highly dangerous to the preservation of peaceful relations, providing the opportunity to enemies of Japan to misrepresent her case and hold her up before the world as conspiring to push her influence into China with the idea of dominating that country.

As America is in a safe position, so Great Britain and France can afford at this time to approach the problem with more or less altruistic considerations. Their possessions in Asia are not menaced by any power violating the neutrality of China. But Japan could not. She had already paid the penalty for her trustfullness in the ability of China to act as a buffer, and common-sense arose above sentiment and the fourteen points, and admonished her to beware of any idealistic rearrangement of Eastern Asia as long as the position of Russia in Mongolia remained undefined.

Japan's position throughout the consortium negotiations can therefore be readily understood, but even this had to be clearly and confidentially communicated to her ally, before Downing Street grasped the full meaning of what she was holding out for. It is a remarkable commentary upon the vagaries of modern diplomacy, that while the British government was straining every effort to protect the approaches to India from a possible return of its inveterate and traditional Asiatic enemy, that Earl Curzon, the highest British authority on Asiatic problems and policies, should have to be reminded that Japan's one menace to her national existence came from the same quarter. The British foreign minister entirely overlooked the important fact that Japan's interest in Eastern Mongolia dated from the year that Russia was secretly pushing her new military railway towards the north-east frontiers of India, and seeking loans in Paris to facilitate her advance upon Peking. Viscount Chinda was finally compelled reluctantly to throw diplomatic courtesy to the winds, in order to make clear the case for Japan. It is well to emphasize this basic Japanese position. He said, in effect, that the Taonan-Jehol line with its branch to the sea, was projected solely for the purpose of making it *a means of common defence on the part of China and Japan against foreign invasion coming from the direction of Urga*, in addition to facilitating the economic development of the territory. He expressed surprise and regret that America and Great Britain interpreted this line as an eventual menace to Peking, and in view of the common interest of all the powers, made clear that Japan would make no objection to pooling the line within the consortium, but still hoped that the British government would support Japan in her position. Viscount Chinda laid stress on the desire on the part of Japan to build these two essential lines as speedily as possible, and if the other groups in the consortium were reluctant to join in financing it that Japan be permitted to undertake this single-handed. Viscount Chinda could not know at that time, that this line, or its counterpart, the Chinchow-Aigun which the American group controlled was designed for the sole purpose of undermining Japan's position in Manchuria, and as a lever to force her to sell out the South Manchurian line to the Harriman group.

The insistence of Japan upon the right to construct these two lines as speedily as possible and to finance them independently, if needs be, brings under the lime-light the urgent reasons for their construction as an imperative strategical measure, for the preservation of Japan's position and as a basic line of defence for the further opening up of Mongolia to the colonization of the yellow race. That Japan finally accepted the assurances of her allies to respect her vital economical and strategic rights in this region is perhaps the most momentous feature of the entire consortium program. If this strategical outer line of defence is now to pass under international financial control it must carry with it the obligation of international armed support in the event that the neutrality of the line or the region is ever menaced from the direction of Urga. Great Britain, France, and the United States, have therefore assumed a grave responsibility in coercing Japan to recede from her position and surrender her rights to the Taonan-Jehol line to the consortium, and must, in honor, accept the corrollary, and dispatch their armed forces to the region in the event that Japan is ever called upon to defend her position and preserve the territorial integrity of China. Present indications point to the inevitable occasion when, if the consortium holds together long enough, when the boys of America may again be called upon to cross the ocean and take part in a war of the races on the side of Japan and China in order to preserve Mongolia for the expansion of the yellow men.

Herein lies the gravity of the political complications created by the successful organization of the consortium. America and Great Britain have given birth to a new doctrine that we must be prepared to uphold unless wiser counsels prevail and a way found to settle the matter on a different basis. The consortium negotiations brought out the definite statement by Mr. Lamont and Earl Curzon that the American and British governments hold that "Mongolia and Manchuria are important parts of China." At the time Mr. Lamont made this statement, Chinese and Japanese troops were co-operating in Outer Mongolia for the purpose of ousting the Russians and restoring this province to China. The declaration was, therefore, inconsistent with existing conditions, the application of a paper doctrine to a desperate problem that Chinese and Japanese armies were then engaged in solving on the ground. Under the circumstances, how the American and British governments expected China to retain control over "one of its most important provinces" without the application of force passes all imagination. The inconsistency of the American stand was perhaps more clearly brought out in a report of the state department of November 23, 1919, and published in the New York *Times* of that date, which called upon the British government to exert a reassuring influence on its Ally in the matter of the consortium, and wound up by saying "the United States would be happy to co-operate in arranging for an immediate advance to China for the purpose, amongst other things, of the disbandment of the Chinese troops raised under the Sino-Japanese war participation bureau, *and those troops now being employed against Outer Mongolia, which China is seeking to recover from Russia.*" Mr. Lamont in June, and Earl Curzon in August, declared that "Mongolia is an important part of China" and could not be excluded from the scope of the consortium, while on November 23, the state department declares that it is ready to permit the consortium to make an immediate advance to China for the purpose of disbanding the troops operating to restore this territory to Chinese sovereignty ! The two declarations are incompatible. If Mongolia is considered to be a permanent part of China, then it will require something more than a mere paper declaration to make it so. When this same paper declaration provides for the disbandment of troops operating to give practical effect to the doctrine, then the only conclusion that can be safely arrived at, is that America and Great Britain were opposed to any Japanese co-operation with China in order to restore Mongolia to its rightful sovereign. Events are now transpiring in Mongolia that proclaim loudly the doctrine is premature. We cannot recall that such friendly solicitude for the preservation of China's integrity was ever formally or officially expressed by any of the great powers when the armies of the Czar stood behind Mongolia's declaration of independence and the corrupt deal which brought the country under the protection of Russia. Nor do we recall that any serious objection was raised in 1916, when Russia protested the construction of railways in Inner Mongolia on the grounds that such lines were in direct conflict with her established policy to close this territory to Chinese colonization. It remained, however, for the powers to take a firm stand in defense of China's interests, only when these seemed to be menaced by Japan. Such diplomatic inconsistencies and wilful ignoring of the vital problems of Japan have contributed to the formation of a settled conviction in the minds of intelligent Japanese that their higher interests are being subordinated to those of Russia, a clear case of the solidarity of the white against the yellow man. Barred out of the white man's territories in the Pacific and forced into Asia to seek the future of the race, Japan finds on all sides the operation of the same set policy to oppose her expansion and defeat her plans for defense. We may be wrong, and if so, would gladly correct the error, but to our knowledge, not one word of honest protest was heard from America or Great Britain when Russia gobbled Mongolia in order to facilitate her descent into China and designs upon Japan, nor did China violently object or make any serious effort to save her territory. As soon however, as Japan takes the necessary steps to protect herself against a "menace from the direction of Urga," the western powers with common accord evince a sudden and deep interest in China's integrity and formally place on record *that "Mongolia is an important province of China"* in order to circumscribe Japan's preparations to defend her national existence.

The declaration, however, clears the international political atmosphere in regard to the status of this debatable territory, which some time in the not distant future will become the battle ground of the races, the cockpit in which Mongol and Slav will contend for supremacy and the right to exist. A firm declaration of this nature should carry with it the implied assurance to China

and Japan, that if it becomes necessary, the combined forces of the consortium powers will be employed to give effect to this status of Mongolia and preserve the province to China. In the event of future Russian agression or "peaceful penetration" in Mongolia, this declaration would seem to bind the powers to come to the full support of Japan to guarantee the integrity of China and the security of her own position.

In this somewhat belated declaration China and Japan are therefore to be congratulated, but at the same time it opens up the equally important question of how far the powers will go in support of their policy, if ever put to the test. As matters now stand, it is safe to predict that no American, British, or French army, will ever be disembarked upon the shores of Asia to defend the integrity of China in the far-off depths of Mongolia or Sinkiang. Financial or economical pressure by the league of nations can never influence Russian movements in Central Asia or along the far-flung Mongolian borders and Altai slopes. If this be true, it would then appear that China will have to rely entirely upon herself to protect the territory which the powers now delcare is one of her most important provinces. This, in turn, opens up the whole question of China's ability to cope with her northern neighbor, and the urgent necessity of arriving at some understanding whereby China and Japan can co-operate for the common defense of territories that will assure to the yellow race its right to exist and expand within the lands set aside by nature as their peculiar habitat.

While this is being written, comes news of the fall of the Mongolian capital and the utter collapse of the Chinese forces. The Russians are again in Mongolia, and a bankrupt Chinese government is ordering armies from all sides for the recapture of Urga. There is no escape from the logic of the situation. America, Great Britain, and the pressure of Chinese public opinion, have compelled the cancellation of the Sino-Japanese war pact for the common defense of these territories. Japan has been coerced into surrendering to the consortium her right to defend herself in South Manchuria along the Taonan-Jehol line, or Inner Mongolian borders. Mongolia is declared to be an important province of China, as far as Japan is concerned, but the law of the powers cannot be extended to Russia. The time may not be far distant, when America and Great Britain will be compelled to take action to give effect to the new doctrine, or step aside while Japan and China settle the future status of the territory to their own satisfaction.

Right here, it is well for us to pause and give serious thought to questions that are bound to obtrude after digesting the above statement of facts. The policy of the consortium powers holds that Mongolia and Manchuria are integral and important parts of China. The consortium was organized to establish, amongst other things, the sovereignty of, and to strengthen, the central government of China. For all practical purposes Japan has been prohibited from operating alone or in conjunction with China to defend herself against a "menace from the direction of Urga." Therefore, China must step into the breach and discharge her international obligations by defending her own integrity. All perfectly proper. We now face the facts. Urga, the capital of Mongolia, has been captured by the reactionary Russian army under Baron Ungern. The Chinese troops have fled. Ten thousand peaceful Chinese, says the report, have been massacred. China is now called upon to defend her territory. The government is bankrupt. There are no funds to wage successfully a campaign in Mongolia. Question, (1) Will the consortium advance a loan of fifty, or even ten million dollars, to enable China to carry on the necessary military operations to give effect to its doctrines ? (2) In the event that the consortium refrains from financing China in a military campaign in Mongolia, will the American and British governments uphold its doctrine and dispatch an army to assist China ? Great Britain or America cannot consistently call upon Japan to undertake this task alone after their declarations, without surrendering their position and recognizing her paramount interest in these regions. (3) If a "menace from the direction of Urga" spreads and approaches the limits of southern Manchuria, or occupies territory along the line of the projected Taonan-Jehol railway, will the consortium powers prohibit Japan from taking the necessary steps to protect herself and send their troops into the region ? In other words, how far is Japan expected to expose herself to attack in order to meet with the desires of the other powers ? China's integrity must be preserved. That is basic. Japan has subscribed to that doctrine. If China cannot guarantee her neutrality or defend her integrity, what is the answer ? China has an excellent case, though impaired by the inability to defend herself. Who, then, will protect her ? Japan has an excellent case, notwithstanding the mistakes of her military, but one opposed to the policies of America and Great Britain. What is just ? Is it just that America and Great Britain should impose their views upon Japan, when they reject and resent any interference with their own vital policies ? What should be done ? Will we permit Japan to solve her own problems in her own way, or will we insist upon sending an army into Mongolia and Manchuria and so guarantee her position from any possible menace ? Here we are getting down to questions that must be answered and answered rightly, and which may only be decided when we know all sides of the problem. If we are seeking peace in Asia, and not war, then the situation loudly calls for calm deliberation before a conference of the interested powers. The sooner these questions are answered, the better.

We can answer one of these questions right here. If the consortium powers are unwilling to support their doctrines and finance by armed force (this they are in honor bound to do in the event that Manchuria is ever menaced through a conflict in Mongolia) they may escape this obligation by adopting the railway program outlined in "A Square Deal for China." By surrendering all these old political railway rights to China in exchange for an equal mileage in a new system of national railways, the political character of the consortium holdings disappears, and it stands simply as a business organization to conduct business with the Chinese government on a business basis. As long as these old political railway rights and privileges remain pooled in the consortium, the powers concerned cannot escape the obligation imposed upon them to defend these rights. Once, however, they are all surrendered to the Chinese government, their political obligations cease and China becomes responsible for the maintenance of her neutrality. The American people would never consent to the dispatch of an army across the Pacific to protect a railway in Manchuria or Mongolia, especially when the American bondholders are amply guaranteed by the good faith and general revenues of the central government in addition to a mortgage on the physical properties and earnings of the lines. Yet under the present consortium plan this is what we are in honor obligated to do, or permit Japan to act independently in these regions. From more angles than one, it would seem wise on the part of the consortium to be just to China, by surrendering these old political rights for equal mileage in a new national system. If the consortium fails to take such action, then it is another question that could come before a general conference for discussion and adjustment.

It becomes clear that Japan's intense interest in the Taonan-Jehol line arose from a desire to protect her position and facilitate China's penetration into regions that have been closed to her in the past, and which must otherwise remain closed to her in the future. A glance at the map will also make clear Japan's interest in the Taonan-Ssupinkai, the Taonan-Changchun, the extension of the Changchun-Kirin line to the sea and the Kaiyuan-Hailung-Kirin line, all opening up new country to development, and at the same time fulfilling the more important mission of strategic barriers, which confront Russia from Tsitsihar to Vladivostok. If any point in this barrier from the sea to Taonan should remain unprotected, it opens the door for Russia to walk through, destroy Japan's position, and force her back once more to the banks of the Yalu.

If the American and British governments will face the situation in the light of these facts and lend their friendly co-operation

to the furtherance of Japan's plan for the real preservation of China's integrity and her own security, the great cause of world peace will be materially advanced. This is the true function of an international consortium in assisting China to establish a representative government and maintain her sovereignty over her outlying provinces. The purely economic and commercial problems of China will solve themselves automatically under the guiding hand of the consortium leaders and an honest representative government, in which the military is subordinated to the civil authority and the power to make loans vested in a parliament and responsible cabinet. Administrative loans can then be advanced without fear of their being diverted to the capacious pockets of military grafters, railways will be built, industries established and China slowly led along the road to stability and prosperity. But unless attention is also given to Japan's vital problem and China assisted to regain full sovereignty over her largest outlying provinces, the consortium program will in the end, prove abortive, and loans advanced for other purposes become a total loss. The consortium must serve as an international instrument for Asiatic peace as well as for the economic reorganization and development of China. The same principles that guided the drafting of the Peace Treaty insuring to France, Italy, Britain and other nations guarantees that their frontiers will be protected against future aggression, must be applied to China, not only for her own sake, but for the security of Japan. If such guiding principles are ignored, then the other powers must expect that Japan will insist upon her right to take the necessary single-handed steps to provide her own guarantees.

This is the real significance of the consortium negotiations, Japan has protected her position, in the same way that her allies have applied the law of self-preservation in other parts of the world, and has received their assurance that her vital interests will be respected. It closes a disagreeable chapter in international diplomacy that might well have led to serious complications because of the absence of mutual understanding and to the adherance to secrecy that characterized the negotiations. We enter upon a new epoch in Far Eastern politics. Japan and America are now partners. The only danger that the harmony of the consortium may be destroyed lies in the reluctance of China and her friends to accept the logic of the facts. Strenuous efforts are being made and will continue to be made to keep alive the agitation against Japan and create the suspicion in the minds of her partners that she is working against them in an underhand manner. Were China left to her own inclinations, it would not be difficult to bring about a happy rapproachment with Japan and cement these relations by a new understanding that would receive the full support of the other great powers. It is almost hopeless, however, to look for such a practical and statesmanlike outcome to years of misunderstanding and cross-purposes as long as secret and confidential propaganda emanating from Peking continues to poison the international atmosphere.

Turning from the purely political to the practical business side of Japan's exclusion of her other lines in Manchuria from the scope of the consortium, this is in exact accord with the provisions of Article 2, of the Agreement signed at Paris on May 12, 1919, which states that: "Existing agreements relating to industrial undertakings upon which it can be shown that substantial progress has been made may be omitted from the scope of this agreement." Pursuant to this strictly business compact, the Japanese have excluded those lines which act as direct feeders to the main South Manchuria railway, and upon which substantial progress has been made. The Kirin-Huining and Taonan-Changchun lines, while apparently entirely new and distinct propositions are simply the logical extensions of the completed Changchun-Kirin Railway; the Chengchiatun-Taonnafu line is the extension of the Ssupingkai-Chengchiatun line now in operation. These lines come within the direct application of Article 2 of the consortium agreement. The Kaiyuan-Hailung-Kirin feeder is so vitally a part of the South Manchuria system, that it could not safely be included in the consortium without giving rise to serious clashes of interest in the very heart of Japan's defensive and strategical zone contiguous to Russia's Far Eastern military capital at Harbin. The Sinmunfu-Mukden line, while under a Japanese loan agreement, has been operated for many years as an integral section of the Peking-Mukden Railway under the direct management of the Chinese ministry of communication.

There was never any real objection on the part of the other powers to Japan's claims to special consideration in the control of these lines, but it required considerable correspondence to make this point absolutely clear to the Tokyo authorities.

The whole controversy surged around the question of the inclusion or exclusion of the Taonan-Jehol and the Taonan-Changchun lines, and the Japanese government held out to the last moment against all arguments that would deprive them of this means of self-defense in the event of an emergency. The problem was solved in Japan through the efforts of the Japanese bankers led by Mr. J. Inouye, governor of the Bank of Japan, and other firm friends of America who influenced the government and military leaders to recede from their position on the Taonan-Jehol line and trust to the good-faith of America and their ally, to see that Japan's vital interests were never placed in jeopardy by the operation of the consortium. So sure were the Japanese bankers that they could ultimately arrive at a happy and harmonious solution without unduly injuring the higher interests of the empire, that Mr. Lamont was informed that his plan would be accepted. Upon this assurance Mr. Lamont voyaged to the Far East and happily concluded upon the ground in personal contact with the Japanese leaders, the agreement which has finally brought the two nations into harmonious co-operation and partnership for the furtherance of the consortium program.

When viewed in the light of all the facts surrounding these negotiations the final credit for their successful outcome must be divided by Mr. Lamont with Mr. Inouye and the leaders of the Japanese group, whose whole-hearted acceptance of his plans, friendly desire to co-operate with America and trust in the good-faith of the American government, finally overcame the sterner opposition of their own military element into whose hands has been entrusted the safety of the empire against attack "from the direction of Urga." It is too early to indulge in prophecies, but it is safe to say that Japan's surrender of her most vital line of outer defense to the consortium in order to demonstrate her friendship with America and China, will stand as one of the highest examples of national self-sacrifice to the cause of world peace and Pacific harmony.

G. B. R.

Official Text of the Consortium Agreement

The official text of the new consortium agreement signed on October 15, 1920, is as follows:—An agreement made the fifteenth day of October, 1920, between

The Hongkong and Shanghai Banking Corporation, having its office at 9 Gracechurch Street in the City of London (hereinafter called "the Hongkong Bank") of the first part,

The Banque de L'Indo-Chine having its office at 15 bis Rue Laffite, Paris (hereinafter called "the French Bank") of the second part,

The Yokohama Specie Bank Limited having its office at Yokohama in Japan (hereinafter called "the Japanese Bank") of the third part, and,

Messrs. J. P. Morgan & Co., Messrs. Kuhn Loeb & Co., the National Bank, New York, the Guaranty Trust Company of New York, Messrs. Lee, Higginson & Co. of Boston and the Continental and Commercial Trust and Savings Bank of Chicago (hereinafter called "the American Managers") acting as to the United Kingdom by Messrs. Morgan, Grenfell & Co., of 22 Old Broad Street in the city of London and as to France by Messrs. Morgan Harjes & Co. of Paris of the fourth part.

Whereas the Hongkong Bank, the French Bank, the Japanese Bank and the American Managers are acting for the purposes of

this agreement as the representatives of the British, French, Japanese aud American groups respectively,

And whereas the British, French, Japanese, and American groups were formed with the object of negotiating and carrying out Chinese loan business,

And whereas their respective governments have undertaken to give their complete support to their respective national groups the parties hereto in all operations undertaken pursuant to the agreement hereinafter contained and have further undertaken that in the event of competition in the obtaining of any specific loan contract the collective support of the diplomatic representatives in Peking of the four governments will be assured to the parties hereto for the purpose of obtaining such contract,

And whereas the said national groups are of the opinion that the interests of the Chinese people can in existing circumstances best be served by the co-operative action of the various banking groups representing the investment interests of their respective countries in procuring for the Chinese government the capital necessary for a program of economic reconstruction and improved communications,

And whereas with these objects in view the respective national groups are prepared to participate on equal terms in such undertakings as may be calculated to assist China in the establishment of her great public utilities and to these ends to welcome the co-operation of Chinese capital.

Now it is hereby agreed by and between the parties hereto as follows :—

1. Each group reserves to itself the right of increasing or reducing the number of its own members but so that any member of a group dropping out shall remain bound by the restrictive provisions hereof and any member of a group coming in shall become subject to the restrictive provisions hereof and so that no group shall (without the consent of the others) be entitled to admit into its group a new member who is not of its nationality and domiciled in its market. The admission of any new group shall be determined by the parties hereto subject to the approval of their respective governments.

2. This agreement relates to existing and future loan agreements which involve the issue for subscription by the public of loans to the Chinese government or to Chinese government departments or to provinces of Chiua or to companies or corporations owned or controlled by or on behalf of the Chinese government or any Chinese provincial government or to any party if the transaction in question is guaranteed by the Chinese government or Chinese provincial government byt does not relate to agreements for loans to be floated in China. Existing agreements relating to industrial undertakings upon which it can be shown that substantial progress has been made may be omitted from the scope of this agreement.

3. The existing agreements and any future loan agreements to which this agreement relates and any business arising out of such agreements respectively shall be dealt with by the said groups in accordance with the provisions of this agreement.

4. This agreement is made on the principle of complete equality in every respect between the parties hereto and each of the parties hereto shall take an equal share in all operations and sign all contracts and shall bear an equal share of all charges in connexion with any business (except stamp duties and any charges of and in connection with the realization by the parties hereto in their respective markets of their shares in the operations) and the parties hereto shall conclude all contracts with equal rights and obligations as between themselves and each party shall have the same rights privileges prerogatives advantages responsibilities and obligations of every sort and kind. Accordingly preliminary advances on account of or in connection with business to which this agreement relates shall be borne by each of the parties hereto in equal shares and each of the parties hereto shall be entitled to participate equally in the existing agreements and will offer to the other parties hereto an equal participation with itself in any future loan business falling within the scope of this agreement. Should one or more of the parties hereto decline a participation in the existing agreements or any of them or in any such future loan business as aforesaid the party or parties accepting a participation therein shall be free to undertake the same but shall issue on its or their markets only.

5. All contracts shall so far as possible be made so as not to impose joint liability on the parties hereto but each of the parties hereto but each of the parties hereto shall severally liquidate its own engagements or liabilities. The parties hereto will so far as possible come to an understanding with regard to the realization of the operations but so that such realization in what ever manner this may take place shall be for the separate benefit of each of the parties hereto as regards their respective participations therein and so that each of the parties hereto shall be entitled to realize its participation in the operations only in its own market it being understood that the issues in the respective markets are to be made at substantial parity.

6. Any one or more of the parties hereto who shall have accepted its or their participation in any business hereunder shall be entitled by notice in writing to call upon the other or others of the parties hereto who propose to issue their own respective participations to issue for the account of the party or parties giving such notice or notices either all or one-half of the amount which may constitute the participation of the party or parties giving such notice or notices and the party of parties so called upon shall issue the said amount or amounts (hereinafter called "the residuary participation") specified in such notice or notices upon and subject to the terms and conditions following, viz. :—

(1) Such notice or notices must be received by the other or others of the parties hereto before the execution of the final agreement for the issue of the loan or (in the case of an issue of a part only of the loan) of so much thereof as the parties hereto may from time to time agree to issue.

(2) The party or parties to whom such notice or notices shall have been given shall be entitled to decide among themselves and without reference to the party or parties giving such notice or notices as to which one or more of them shall issue the Residuary Participation but in default of any such decision they shall issue the same equally between them.

(5) In issuing the residuary participation no distinction shall be made between the residuary participation and the amount or amounts issued on its or their own account by the party or parties issuing the residuary participation which shall in all respects be subject to the conditions of the respective syndicates which may be formed for the purpose of effecting the issue.

(4) Each of the parties issuing the residuary participation shall be entitled to decide for itself and without reference to the party or parties giving such notice or notices as to what expenses shall be incurred in relation to the issue of the total amount issued by such party.

(5) The party or parties issuing the residuary participation shall be entitled between them to charge the party or parties giving such notice or notices with a commission of not exceeding 1¼ per cent. on the nominal amount of the residuary participation and also with a *pro rata* share of the total expenses which the issuing party or parties may in their sole discretion incur in relation to the whole issue and being in the proportion which the residuary participation bears to the total nominal amount of the issue.

(6) The party or parties issuing the residuary participation shall not by virtue of this agreement incur any responsibility to subscribe for the residuary participation or to cause the same to be subscribed.

(7) Each party issuing the residuary participation shall apply all subscriptions received by it *pro rata* between the residuary participation issued by it and the amount issued by such party on its own account.

(8) Each of the parties issuing the residuary participation will apply for and use its best endeavors to obtain a quotation on its market for the total amount issued by it.

(9) No issue of the residuary participation or any part thereof shall be made by the party or parties giving such notice or notices unless mutually agreed by the parties hereto.

7. No participation shall be given by any one of the parties hereto outside its own market. Any participation given in its own market by any one of the parties hereto shall be for its own market only or in the event of the issue including any of the residuary participation for the accounts *pro rata* of the issuing bank and the party or parties giving such participation, the party giving the same shall use its best endeavors to secure that no part of such participation shall be transferred to parties outside the market of the party giving the same. Any other participation shall be given only with the consent of all parties hereto and shall be borne in equal shares by the parties hereto.

8. This agreement shall remain in force for the period of five years from the date hereto provided nevertheless that a majority of the parties hereto may by twelve months' previous notice in writing addressed to the other parties hereto determine this agrreement at any time.

In witness whereof the duly authorized representatives of the respective parties hereto have set their hands the day and year first above written.

For the HONGKONG AND SHANGHAI BANKING CORPORATION
On behalf of the British Group :
C. S. ADDIS.
For the BANQUE DE L'INDO-CHINE
On behalf of the French Group :
TH. DE LA CHAUME.
For the YOKOHAMA SPECIE BANK, LTD.
On behalf of the Japanese Group :
K. TAKEUCHI.
For and on behalf of the American Group :
J. P. MORGAN & CO.
KUHN, LOEB & CO.
THE NATIONAL CITY BANK OF NEW YORK
by J. A. STILLMAN, *President.*
THE GUARANTY TRUST CO. OF NEW YORK
by J. R. SWAN, *Vice-President.*
CONTINENTAL & COMMERCIAL TRUST & SAVINGS BANK, Chicago
by JOHN JAY ABBOTT, *Vice-President.*
CHASE NATIONAL BANK, New York City
by A. H. WIGGIN, *Chairman.*
LEE, HIGGINSON & CO.

America and Japan in Manchuria

Harriman's Plan to Force Japan to Sell the South Manchuria Railway

WHEN the Peace of Portsmouth was signed, relations between Japan and America were most cordial. Japan had fought her great adversary, driven her back beyond the Sungari, and drenched the soil of Manchuria with the blood of her sons. Her reward, the fruits of her victory, consisted of a broken down, busted railway, with its short term lease inherited from Russia. True, she received the southern half of the frozen island of Saghalien, but the one tangible award was the South Manchuria Railway, while Russia retained control over her military line and base in the north, undamaged by the war. Japan had no funds even to convert her prize into a going concern. She was bankrupt, or almost so. She borrowed the funds in England and spent them in the United States to reconstruct the railway. She had to work quickly and be ever on the alert to fortify herself against the return of her formidable enemy.

This was the situation, in brief, when Mr. Harriman, the great railway manipulator, conceived his idea for a round-the-world transportation system, and initiated those fateful and secret negotiations which have since been made to serve as the lever to undermine Japan's position in Manchuria. We could write a book from our own experiences on the various ramifications surrounding the Manchurian controversy, but prefer to let the story be told by Mr. Willard Straight, who speaks to us out of the grave through the pages of the great magazine he created. In effect, Mr. Straight tells us that while he was still acting as consul-general, he was at the same time in correspondence with Mr. Harriman, elaborating a scheme which would nullify Japan's position in Manchuria through competing railway rights.

Mr. Straight tells us in no uncertain terms, that the Chinchow-Aigun railway contract (the counterpart of the Taonan-Jehol line) was to be employed as a lever to compel Japan to sell out her rights to the South Manchuria Railway to Mr. Harriman, or, if Japan was unwilling to make such an agreement, then the alternative line would place her in a "very embarassing position in Manchuria." It is well that the reader should form his own opinion from the facts. We republish in full the story of Mr. Straight, from the February 1921 number of "Asia." It needs no comment. The policy of the consortium, the whole attitude of America towards these questions must undergo a change. We are confident that the American people when they know the facts, will never go to war against a friendly power in order to further the grandiose schemes which originated in the mind of the greatest railway manipulator and stock exchange operator our country has ever produced.

* * *

AN AMERICAN IN ASIA

Willard Straight in Far Eastern Finance

By Louis Graves

The impression that he made upon E. H. Harriman, when the railroad financier visited Korea in 1905, was directly responsible for Willard Straight's entrance into the financial affairs of the Far East. Harriman's imagination had been seized by the vision of an around-the-world Harriman transportation system, with the Trans-Siberian Railway a part of it. It was Harriman of all American financiers who first saw the opportunity for great American development in the Far East and backed his belief with hard personal work and large plans.

"The working out of the Eastern question interests me and there is much we can do to get it started on more direct and straightforward lines than heretofore," Harriman wrote Straight just before his death after four years of correspondence and relationship with Straight in Far Eastern affairs. And in a letter to another he thus recorded the reason for his interest. "These financial groups are very uncertain and shift and change with the signs of storm or calm. The development work appeals to me more than anything else. After we have determined what we will do, then we can arrange the financing, and how it shall be done and who shall profit by it."

"I understand," wrote Straight in a memorandum, "that the suggestion that Mr. Harriman make the journey of 1905 to the Orient came from the Japanese government, with whom he had established close relations by virtue of the assistance rendered by him and by Mr. Schiff in co-operation with Sir Ernest Cassel of London, in floating the Japanese loan in New York and London. *By reason of the Russian defeat, he believed it might be possible to make some arrangement for the acquisition of the Russian Trans-Siberian line.* In July or early August, 1906, assisted by Mr. Lloyd Griscom, then American minister to Japan and Mr. H. W. Denison, an American attached as adviser to the Foreign Office, Mr. Harriman reached an understanding with Marquis Ito and Count Katsura, then the Japanese premier, under which Mr. Harriman was to furnish the capital for the reconstruction and operation of the South Manchuria Railway and for the development of various mining, timber and other enterprises along the line. These the Russians had extracted from the Chinese, and the Japanese in turn had taken from the Russians. The Japanese were to have a joint interest and political control in this undertaking. Mr. Harriman was assured there would be no hitch, but was advised that nothing definite could be done pending the result of Count Komura's negotiations with the Chinese government."

A year later Straight learned from Harriman that he had been informed through one of the leading Japanese financiers that the Chinese had not approved and the Japanese had determined to deal with the problem themselves.

"Mr. Harriman's project had not been definitely turned down, but it was obvious that no further progress could be expected," wrote Straight. "*Prior to my departure for Mukden, in August 1906, Mr. Harriman asked me to keep him advised as to railway developments in Manchuria. He was still determined if possible to obtain a foothold in that region to carry out his scheme.* Ultimately the Japanese government arranged to obtain in London the funds with which to finance the construction of their South Manchuria road. The Japanese, much to the disappointment of British interests, expended the funds which they had obtained in London in placing orders for railway material in the United States. In doing so, as I understand it, they were partly influenced by a desire to make up in some way for the failure to carry out their agreement with Mr. Harriman."

This decision by Japan to hold fast her claims in Manchuria marked the unfolding of her imperial plan in China. It also marked the beginning of a long and tedious, but obdurate fight, in which Straight played the leading active part—aimed to prevent Japan and Russia from closing in on Manchuria to the detriment of other national interests and Chinese sovereignty. The conclusion five years later of the contract between China and the six power group—the United States, England, France and Germany with Japan and Russia admitted as partners—for joint loans to China, was the first great result of the fight. The consortium of 1920 is the sequel.

The story of the fight begins in the summer of 1907, *with Straight as consul-general at Mukden. The general aim was to establish an American economic foothold in Manchuria. The concrete aim was to build a railroad which, by paralleling the South Manchuria Railway (Japanese) and its northern extension to Harbin (Russian), should nullify the strategic control over Manchuria held by Russia and Japan through their possession of this railroad link between the Trans-Siberian line and an ice-free port on the Gulf of Chihli.*

"At that time," Straight wrote, "Lord ffrench, representing Pauling and Company [British contractors], and J. O. P. Bland, representing the British and Chinese Corporation, came to Mukden and secured from the Chinese government the right to build an extension of the Chinese Imperial Railways [the line from Peking to Mukden] from Hsinmintun, north to the town of Fakumen, 47 miles distant, with the ultimate right to extend this road to Tsitsihar [about 400 miles north] on the Trans-Siberian Railway. [This would have given a railroad connection from the Trans-Siberian line across Manchuria to the sea, quite independent of the Russo-Japanese line.] I was familiar with these negotiations. *They seemed to offer an opportunity for the realization of Mr. Harriman's plans and for the creation of Anglo-American-Russian co-operation in Manchuria. This I believed to be essential, for I did not feel that the United States was sufficiently strong politically alone to undertake to counterbalance Japanese influence.*"

What the building of this British railroad as a parallel to the Japanese South Manchuria line might have meant politically may be judged from a significant statement recorded by Straight:

"After lunch, Goto's aide [Baron Goto, minister of communications] came in. *He said Japan would, if necessary, with weapons, prevent the construction of the Hsinmintun-Fakumen Railway.*"

The Japanese protested to the British, their allies, and the British foreign office withdrew its support from the scheme, which fell by the wayside. But Straight adapted it later to the plan he was working out, as providing the means for joint American-British action in Manchuria under American leadership.

"I had several discussions with the Viceroy [Hsu Shih-chang, now president of China] and Governor [Tang-Shao-yi]," Straight wrote, "and as a result drew up an outline of agreement, which would give to American interests the contract for a loan of some $20,000,000, carrying with it the right to establish a Manchurian bank to co-operate with the Manchurian government. This bank would be the financial agent of the Manchurian government in undertaking mining, timber and agricultural development and the construction of certain railways, among others the line from Tsitsihar running north to Aigun on the Amur River. *This scheme I sent to Mr. Harriman in September,* 1907. *Early in October I received a cable stating that financial conditions in New York were such, brought on by the panic, that the transaction would be impossible.*"

This plan put up to Harriman for backing was Straight's first important contribution to the solution of the Far Eastern problem through American action. He was convinced of Harriman's intention to put through a big idea and he knew that the panic of 1907 meant only a temporary delay. In the field, he continued to work in close contact with Tang Shao-yi and to keep the state department and Mr. Harriman fully informed at home.

The relationship of these two men—Straight, a mere untried youngster of twenty-seven, out on the field, and Harriman, the greatest railroad-financial genius of his generation, at home, each working with independent mind and vision, with strong confidence in the other and with assurance of America's ability to attain a place of great influence on the Asiatic continent—was a dramatic one. The two stood out alone in the breadth of their vision and resourcefulness. All the time Straight in Manchuria, in touch with actual conditions, was working out plans and the diplomatic facilities for carrying them out, to be put up to Harriman. He was confident that, when the time was ripe, Harriman had the abiding interest and the nerve to put his power behind them. Harriman on the other hand relied with rare confidence on the observing power, vision and good judgment of Straight. So *great was this confidence, that a year and a half later* Harriman *was making strong representation to the Taft administration that Straight, who considered himself much too young for the post, should be made minister to China.*

In 1908, almost a year from the time Straight first put up his proposition to Mr. Harriman, he was suddenly summoned by cable through the request of Mr. Harriman to return to the United States to discuss the Manchurian financing plans. Harriman had seen that conditions were right financially for reviving the Far Eastern loan. On the night before leaving Mukden—rather, at six in the morning—Straight signed a memorandum of agreement for a $20,000,000 loan along the lines of the discussions of the year before, including a Manchurian railroad. This was a rough preliminary, not the detailed agreement, which it required two more years to get.

"I carried the agreement for nearly six weeks in a small wallet tied about my neck in silk case," wrote Straight. "That memorandum was the groundwork upon which the American group is based."

He was made acting chief of the division of Far Eastern affairs in the state department soon after his arrival in Washington. He took up with Mr. Harriman immediately plans for completing the loan they had discussed.

"On the third of December, 1908, by Mr. Harriman's direction, I called upon Mr. Otto Kahn of Kuhn, Loeb & Company and took up with him the question of the loan to China," he wrote. "Prior to my departure from Mukden it was determined that China was to send Tang Shao-yi as special ambassador to thank the United States for the return of a portion of the Boxer indemnity, and that on his arrival in America he should complete the negotiations for the loan the preliminary agreement for which I brought home with me. In the meantime, early in November, both the Empress Dowager and the Emperor Kuang Hsu died suddenly. At the and of October, moreover, Baron Takahira, who was then Japanese ambassador to Washington, had suggested to President Roosevelt and Mr. Root that, in order to prevent any difficulty between Japan and the United States in the Pacific, there should be an interchange of notes regarding the preservation of the "open door" in China, stipulating that both the United States and Japan should mutually respect the other's interest in the Far East.

"It seemed obvious that Japan was endeavoring to forestall the arrival of Tang Shao-yi and the attempt which it was believed he would make to reach some understanding with the United States, by making it appear through the interchange of such notes that there was a virtual alliance between the United States and Japan. Mr. Root and President Roosevelt were induced to postpone the actual signature of these notes until Tang's arrival. He reached Washington on November 30, the notes were shown him at noon that day by Mr. Root and the notes themselves were signed at four o'clock in the afternoon.

"Tang was very much discouraged. On the death of the Emperor Kuang Hsu, his nephew was named as his successor and his brother, Prince Chun, appointed Regent. The Regent hated Yuan Shih-kai and every effort was made to remove him from office. *Yuan, however, was endeavoring to hold his position by claiming that, through Tang's negotiations in the United States, he would be able to secure American support, which would counterbalance Japanese domination in Manchuria.* The interchange of notes with Japan was promptly used by the Japanese, who were intriguing against Yuan, to prove that Yuan had failed in securing American support and that the United States instead of supporting China against Japan had in reality concluded a virtual alliance with the Japanese government. Yuan was driven from power early in January, 1909, and Tang himself left the United States for London shortly afterward. He felt that any further discussion of the loan was useless. The loan negotiations were dropped for the time being."

But they were dropped only from the Chinese end. The American negotiators were, if anything, more determined than ever to see things through. Mr. Harriman reverted to his original plan of 1905-1906 for the purchase of the Japanese and Russian lines in Manchuria. But during the subsequent conferences in the early part of 1909, a complementary and alternative scheme evolved. *This was to secure from the Chinese a definite contract for the building of another railroad in Manchuria, which could be used as a lever to influence the sale of the Japanese and Russian lines or, failing in this, could be built as an alternative line.* Straight tells of these developments as follows:

"While these events were taking place in Washington and China, Mr. Harriman had kept closely in touch with the situation and my discussions with Tang Shao-yi. In November, Mr. Schiff, who was in close touch with Mr. Gregory Wilenkin, formerly the Russian financial agent in the United States and then the Russian agent in Japan, had been advised that there was still some possibility that Russia would be willing to sell the Chinese-Eastern Railway, if Japan would agree to sell her Manchurian line. Mr. Schiff wrote to his friend, Baron Shibusawa, to ask whether the Japanese would be willing, in view of the previous memorandum of agreement with Mr. Harriman, to sell the South Manchuria Railway to American interests, provided the Russians would sell the Chinese Eastern.

"*This proposition the Japanese turned down. Early in December, I prepared a memorandum as to the basis upon which these two lines might be acquired.* The matter had been taken up with Tang Shao-yi, who had said that China would be glad and would co-operate if we could organize an international syndicate to purchase both lines on behalf of China, thus anticipating the provision for repurchase of the lines contained in the original agreement of 1896 between China and Russia. This memorandum I believe formed the basis for the Knox neutralization proposals [for an international syndicate to buy out the Russian and Japanese railroad holdings in Manchuria]."

Here the situation becomes complicated by the introduction of discussion of another loan to enable American financial interests to take up participation in the building of the Hukuang Railways in South China. The state department had been fighting for the right of American finance to enter this loan with the British, French and Germans. There were therefore three ideas moving concurrently in the minds of the Americans. First and immediately came the effort to purchase the Russian railroad in Manchuria. Secondly, there was the necessity for immediate action to enable the United States to take its place in the Hukuang loan. *Thirdly, there was the fundamental plan in the minds of Harriman and Straight to obtain from the Chinese a Manchurian railway contract to make the American position secure, whether the Russians or the Japanese sold their railroad or not. This contract, later secured, was known as the Chinchou-Aigun plan.* The negotiation of the contract was to be the first essential in the American position. But no contract with the Chinese could be official without a ratifying edict. And therefore the edict for this contract, told of later in the story, became the key to the whole American position. It was in the development of this idea for the Chinchou-Aigun Railway that Straight contributed his first big share in the team-work with Harriman and the group of American financiers now interested.

"Early in May, Kuhn, Loeb & Company decided to send a representative to China to endeavor to complete the loan negotiations which had been undertaken the previous year," Straight wrote. "Subsequently it became obvious that unless American financial interests were willing at once to enter the field, the right to participate with the British, French and German interests in the construction of the Hukuang Railways would be lost to the United States. At this time I was working very closely with Mr. Robert Bacon of J. P. Morgan & Company. That firm was also thinking of sending a representative to Peking, and, in order to secure co-operation between the American financial interests, and to secure as strong representation as possible, it was agreed in June to form the so-called American group, consisting of J. P. Morgan & Company, Kuhn, Loeb & Company, the First National Bank and the National City Bank, and I was designated as their representative. The group was finally organized early in June.

"Mr. Harriman sailed for Europe at the end of May and I followed at the end of June. In early July we had a conference in London regarding the Hukuang Railways without reaching any satisfactory understanding. Shortly after, I went to Bad Gastein where Mr. Harriman was then taking the Cure. I stayed two days with him and talked over the Far Eastern situation very fully.

"No one I think, was familiar with Mr. Harriman's plans for his Manchurian railway and round-the-world transportation system. I doubt very much if Mr. Kahn knew the details and I am quite sure that none of the other interests of the American group, in which Mr. Harriman also had a participation, were at all familiar with his ideas. While in Paris Mr. Harriman had arranged with Mr. X——to go to Petersburg to discuss with the Minister of Finance the possible purchase of the Chinese Eastern Railway [the northern Manchuria line]. I was to endeavor to secure from the Chinese government the right to build a line from the Gulf of Chihli to run north to the Trans-Siberian Railway, possibly up to the Amur.

"Once an agreement had been reached with the Russians and the right for the construction of a north and south line secured from China, we would have been in position to negotiate with the Japanese. If they had been willing to make some arrangement regarding joint operation of the South Manchuria Railway, it would have been unnecessary to construct another north and south line. If they were unwilling to make such an agreement, the construction of another north and south

line operating in conjunction with the Russian road would have placed them in a very embarrassing position in Manchuria.

"I reached Peking early in September and on October 2, with Pauling and Company, signed with the Viceroy of Manchuria an agreement for the construction of a line from Chinchou on the Gulf, to Aigun on the Amur, making the first step in Mr. Harriman's scheme. This line was to be financed in America, and to be constructed by Pauling and Company, who had the original concession from the Chinese government for the line from Hsinmintun to Fakumen. We hoped thus to have the advantage of securing Anglo-American co-operation.

"I had received word of Mr. Harriman's death on September 10. Returning to Peking from Mukden, I found a letter from Mr. Harriman, written on the way from Paris to Cherbourg, in which he told me that X——had come back from Petersburg, where he had arranged with Kokovtseff, the minister of finance, that on his return to Russia from a trip which he was about to make to Vladivostok, he (Kokovtseff) would recommend the sale to American interests of the Chinese Eastern Railway. Mr. Kokovtseff in accordance with his promise did on his return make this recommendation.

"The arrangement had been made with Russia, the contract secured from the Chinese government, but the directing genius had gone. I cabled to New York, urging the group to get in touch with Mr. Harriman's secretary and familiarize themselves with his plans. I had previously urged that a representative be sent to Petersburg in order to negotiate with the Russians but this recommendation had been turned down. No one in New York knew precisely what Mr. Harriman had in mind; no one was capable of carrying through his scheme. The group, I understand, advised the state department of the arrangement which Mr. X——had made. Shortly after, they cabled me, asking whether the imperial edict had been issued, ratifying my preliminary agreement with the Viceroy of Manchuria.

"I replied that from reliable sources I understood that the edict had been issued. [As a matter of fact, it had not, though a secret and vague conditional edict had.] Without cabling the legation, which at that time was in charge of Fletcher [recently ambassador to Mexico], without waiting for confirmation from me, the state department, on the basis of the report above mentioned, launched the neutralization proposals [the invitation sent to the Russian, Japanese, Chinese, British, French and German governments to join in an international arrangement to buy out the Russian and Japanese railroad possessions in Manchuria with an alternative proposition to join with the United States in building the Chinchou-Aigun Railway, the potential rival of the Russian-Japanese line].

"The scene had been set, but to carry through the plan it would have been necessary to conduct unofficial conversations with both Tokyo and Petersburg, to secure the approval of London and Paris and possibly of Berlin, and then, when all arrangements had been made, to make an official proposal. *It would have been wiser, probably, in any case, to have left these negotiations in the hands of private individuals. The scheme was all right but it required delicate handling instead of blacksmith methods.* In Russia, M. Izwolsky, the minister of foreign affairs, was a bitter enemy of Kokovtseff. Also he was anti-American. Izwolsky desired a closer understanding with Japan and Kokovtseff wished to work with American capital. By handling these neutralization proposals through diplomatic channels, the negotiations were placed in the hands of Izwolsky and not of Kokovtseff. Izwolsky used the whole scheme and the bogy of an American incited anti-Russian China, which he built upon it, and the manner in which it had been presented, to convince his colleagues in the government that the only protection against American intrigue was a rapprochement with Japan. He was successful. The proposals resulted in a rebuff to the United States, the nullification of all work which had been done by Mr. Harriman [in endeavoring to buy or internationalize the Russian and Japanese lines in Manchuria] and the signature of the Russo-Japanese agreement of July 4, 1910 [for mutual co-operation and protection of interests in this territory], which practically lost Manchuria and Mongolia to China."

Whatever declaration Russia and Japan had made in treaties and conventions, what these two did *not* want was the "open door" in Manchuria and they quickly came together to defeat it.

The Knox neutralization proposals came out early in 1910 and immediately threw the Russians and Japanese into each other's arms. But though the Knox proposals forced the Russians and Japanese to refuse definitely to sell their railroad lines in Manchuria and furthermore aroused their intense opposition to the building of the Chinchou-Aigun Railway, Straight and Fletcher kept fighting for it with confident hope of success. And success they achieved in the final contract signed by the Chinese a few months later.

"Fletcher managed to extract the Chin-Ai edict from the Chinese," wrote Straight, "on practically the same day that the Knox proposals were published, and Washington's face for the moment was saved—a little bit." But the final agreement for the loan still had to be drawn.

"Our whole play is to work China's fear of Russia and Japan to get our detailed agreement through," Straight wrote later, "then to take Japan and Russia out of the way. Had we done this first and then tried to put through out detailed agreement, the Chinese would have laughed at us.

"The Russians have put their foot down and the Chinese are in a blue funk. They will not move until forced into action by our government. Whether Washington can do more than it has done already to help this ungrateful, vacillating, weak-kneed lot of officials, I don't know. It could if they'd do even a little to help 'emselves."

"Fletcher and I threatened Korostovetz [Russian minister] the other day," wrote Straight on April 17, "that if he didn't get his government to allow our railway to go through without further protest, we'd jolly well have Pauling & Company and the group open an office in Teheran and Constantinople and make a little trouble there. He was quite inclined to take us seriously.

"I saw that the Chinese were dilly-dallying and would continue to do so indefinitely if they were let. I saw that, once we had them under agreement, we could go no farther until we had either squared or defied Petersburg. The last course we could only risk as a last resort. Furthermore, our only club to bring the Chinese to terms was a threat to leave them to the mercies of Japan and Russia. So when things were pretty well settled, I announced that I would leave for Russia and New York. If they closed before I went, I should negotiate on their behalf with the Russians; if not, I should return to New York and report that they were not seriously anxious to build a railway, but were only using us for political purposes." Straight wrote this on April 21.

"Before I left China in April," he wrote later, "we had completed our negotiation of the final agreement for the Chin-Ai line. The Russians and Japanese had entered protests at Peking. But we hoped to be able to reach some understanding with the Russians. To this end I went to Petersburg in June, 1910, and met the ministers interested. I came away convinced that if we started to build our line and told the Russians we would only go as far as Taonanfu for the time being, we would eventually be able to complete the work. This proposition, however, was turned down.

"The Chinese wished to know what the American government was going to do about it all. The Russians, however, had clearly stated that, though they couldn't stop our building the line and had no treaty rights on which to base their protest, they would jolly well take it out of China if she tried to cross their Trans-Siberian road at Tsitsihar, and approach the Siberian frontier. We ourselves couldn't fight. The Chinese would have gone ahead if we had promised to back them up, but this we could not do, and, had we pushed the matter, we should probably have gone off scot-free and seen China lose a slice of territory or two. Our government, therefore, say down in front of the stone wall to the construction of which it had so largely contributed."

This conclusion of Straight's was set down long after the event but during this spring of 1910 hope of success for the Chin-Ai plan ran high. This hope was strongly encouraged by the belief that England, through its alliance with Japan and the influence it could surely exert, if it would, at St. Petersburg, would stand for the "open door," particularly as British interests were directly involved. But instead, England herself yielded.

" It's not the "open door" but the Door Mat policy—and China pays," wrote Straight. "An intimation from Sir Edward Grey to Japan that interference with this project would be regarded as a serious breach of Japan's treaty obligations, and a hint that the London market might tighten against Japan as a result, would have chastened her at once. Had Downing Street firmly but politely told Russia that, if she continued to oppose China's legitimate development in Manchuria, it would be necessary for Great Britain to reconsider her position all along the line, Russia would have been careful. British weakness has been the signal for Russian and Japanese bullying."

The Chinchou-Aigun project was therefore practically dropped. But for Straight it only meant but one battle in the fight and he turned to other projects—the currency loan and the Hukuang loan—to attain the same end.

Straight had come to Peking athrill at the prospect of setting in motion a vast development. The Manchurian loan and the Hukuang loan were matters immediately at hand. But he saw them as the beginning of a new era for China—the symbol and the promise of still greater things to be. Not bankers' profits but the sweep and bigness of the whole scheme—its meaning to the future of his country and to millions of men in Asia—stirred his imagination. Hence the atmosphere of distrust in which he found he had to work fell, at times, like a pall over his spirit.

" What bitterness there is in this China game ! " he wrote in one of his letters home. "It is sickening sometimes. It is almost impossible for you to realize the pettiness and suspicion that prevail here, where every one more or less is spying on every one else. It is the storm centre of world politics, and the foreign community is very small. We see each other nearly every day—there are but few outside influences and diversions—and this brings out the little meannesses of human nature.

" Because one man does not invite another to dinner, because A's wife doesn't call on B's, B curses A and blocks his business. A invites B to dinner and pumps him dry ; and if B be weak or vain, the chances are that A will learn things B has no right to divulge. You are up against the game all the time ; each party to it finds little respite ; for even our distraction must be shared by the same fighting crowd, who carry the scrap with them to the dinner-table and the polo-field."

Though Manchurian development plans were the underlying feature of Straight's work in this winter of 1909-1910, the matter of American participation in the three power loan for the Hukuang Railways was of concurrent interest. But now a new undertaking supplanted both Hukuang and Chinchou-Aigun in the centre of the stage. This was the currency loan, for the reorganization of China's monetary system, a structure tottering insecurely upon a silver foundation.

Japan's Dependence on Foreign Raw Materials

THE Portuguese minister-consul at Kobé makes the following report on the resources of Japan in reply to questions sent to him by the ministry for foreign affairs. Japan is entirely dependent on British India, the United States and Great Britain. For cotton India is indispensable, but Japan also inports some from the United States and China. Sheet iron and steel, and rails, she also receives from England and America, and to the latter she has to turn for mineral oil and leather. Australia supplies most of her wool. For the above commodities she will always be dependent on the foreigner.

Iron, one of the products most essential to her, she only obtains from three mines. Her oilfields are more important, but do not suffice for her needs. At the end of 1918 these numbered eight, and their yield was as follows :

	Koku.
Kurokawa (Nippon Company), Akita ...	625,497
Toyokawa (Oil and Asphalt Company) ...	121,193
Nittsu (Hoden Company), Niigata	502,775
Asahi (Chuo Company), Niigata	109,189
Kanatsu (Nakano Company), Niigata ...	124,743
Higashiyama (Hoden Company), Niigata ...	184,941
Nishiyama (Nippon Company), Niigata ...	320,999
Nishiyama (Nippon Company), Niigata ...	231,025

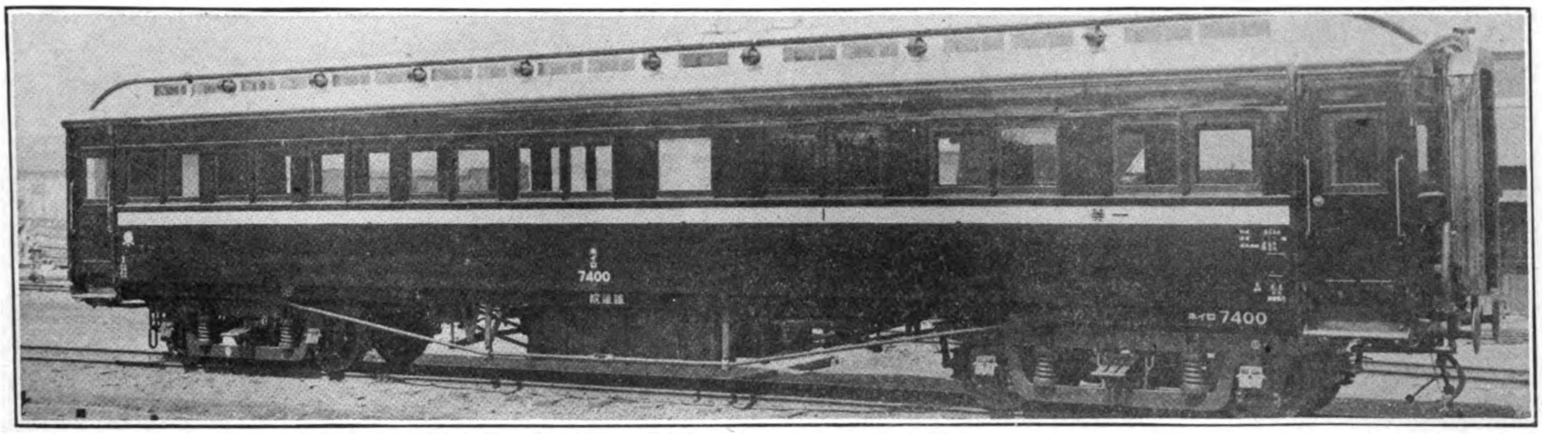
Cotton is not much cultivated in Japan, and never can be, owing to the climate, and also because every part of the empire available for cultivation is required for rice. Neither has Japan any wool owing to an absolute lack of pasturage. Attempts have been made to grow it, and sheep have been imported from Australia, but without success. The hills are covered with bamboo, which kills all other vegetation and produces sickness among the live stock. The import of wool cannot, therefore, be reduced. The above commodities are absolutely essential to the existence of Japan, not only for re-export in the form of manufactures, but also for home use.—*The Financier*, London.

Chinese Coal

OUR discontented miners would do well to read, mark, learn and inwardly digest the fact that France has just bought 100,000 tons of coal from the Chinese government, says the London *Post*. This " deal " synchronizes with the advice given by all the South African shipping lines to burn coal from the Transvaal mines, and is an indication of the trend of things incident to the exorbitant demands of labor. China's coal supply is practically inexhaustible, and is virtually untouched. She has enough good coal to supply the whole human race at its present consumption of a billion tons a year for a thousand years. The coal-bearing areas of China have been estimated at more than 200,000 square miles—a territory twenty-five times the size of Wales, and it is a remarkable fact that, instead of being limited to a few favored districts, this vast supply of coal is found all over the empire and in every province.

Found in an iron pot in 1917, a note of the Mitsui Bank, drawn in 1880, for Y. 160,000 and purchased by Yasutati Murakami, a medicine manufacturer of Dojima, Osako, has been held good by the Yokohama District Court. The bank has been directed to pay Mr. Murakam the face value with accrued interest.

Sixty million firecrackers will be manufactured by a Seattle company in China to help young America celebrate the 1921 Independence Day. W. E. Priestly, secretary of the Hitt Fireworks Company, made this announcement in Seattle on his return from Hongkong, where he installed a new factory in an old hospital building just purchased by the company from the British authorities there. The output for the next July 4 celebration will be sixty million small and large firecrackers to be shipped to Seattle and New York, while advance orders have already been received for twice that number of fireworks for the 1922 season.



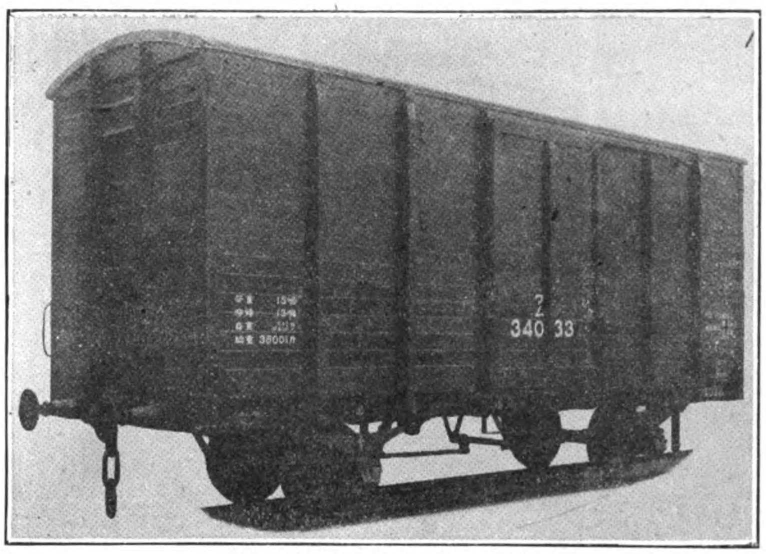
FIRST AND SECOND CLASS PASSENGER CAR
Capacity: First Class, 18 seats; Second Class, 30 seats Total Length, buffer to buffer, 55 feet 6 inches; Tare, 24.86 tons.

Progress in Designs of Japanese Rolling Stock

Some Striking Effects of Nationalization

THE standardization of parts of coaching stock on the Japanese government railways was not completed until 1910-11, or roughly three years after the nationalization. In the years 1907-8, and 1908-9, new construction was made from the existing designs owing to the necessity of making use of materials transferred from the purchased railways, but after 1910-11 the policy of superseding them by bogies was generally pursued.

The 4-wheel bogie measures 55½-ft., and the 6-wheel bogie 66-ft., in length, compared with the 26-ft. of the ordinary 4-wheel vehicle. A corresponding gain has been effected in the width and height of the new bogie carriages which are now of practically the same dimensions as those in use on British railways, though inferior to those of America and the Continent. The proportions of the width and height of the car to the gauge are far higher than those obtaining on the existing standard gauge railways.



FREIGHT CAR (Covered)
Loading Capacity: 15 tons; Tare, 7.45 tons; Total Length, buffer to buffer, 26 feet 1¾ inches.

The 6-wheel bogie is practically of the same shape and equipment as the 4-wheel bogie; it is different only in the length of the car body.

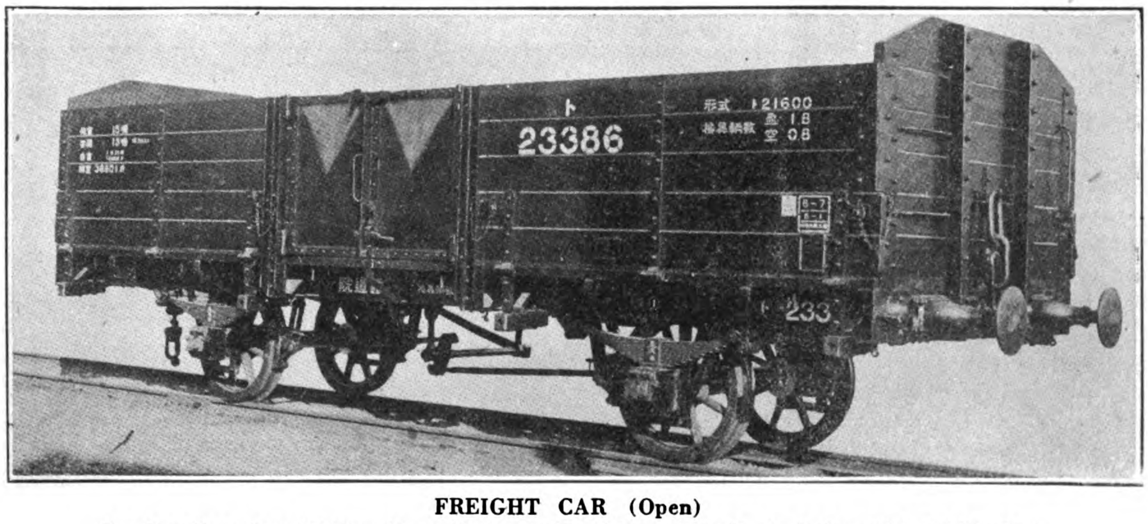
Lighting

Prior to the nationalization, the carriages were generally lighted by means of oil-lamps, except on the main line express and through trains, which were lighted by electricity. But after the nationalization this plan was superseded by a system of lighting by electricity on every express or through train, and by the Pintsch compressed-gas system on the accommodation trains, the use of oil-lamps being confined to a few trains of local service.

At the time of the nationalization, two electric systems were in use, one that of generating current by a dynamo driven by a belt from the car-axle and the other that of using an accumulator, but in 1914-15 and 1915-16, the method of lighting was unified on the "axle-dynamo" system. Trial use is being made of Vickers' dynamos.

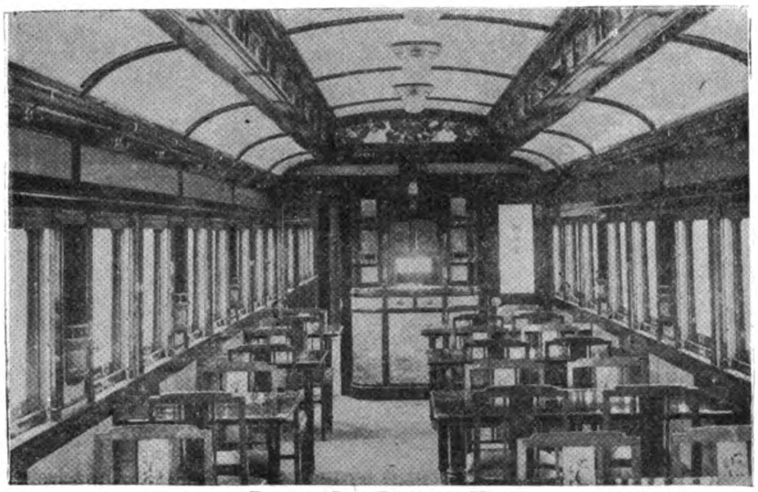
Heating

The use of steam-heating apparatus was extended after the nationalization, to all passenger trains, but on some mixed trains where the supply of steam is not practicable, stoves are provided. Except in carriages of special contrivance, each carriage is supplied with an iron pipe radiator, connected by a small pipe branching from the main pipes that are laid under the floors of the car bodies.

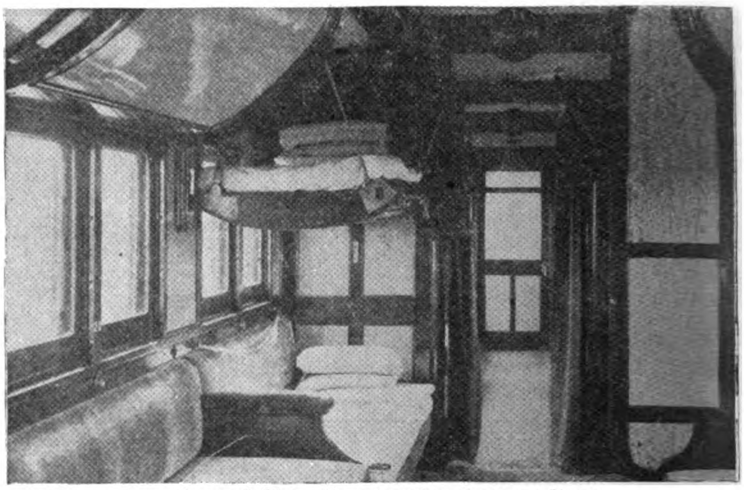


FREIGHT CAR (Open)
Loading Capacity: 15 tons; Tare, 6.73 tons; Total Length, buffer to buffer, 26 feet 1¾ inches.

In the earlier stage of the



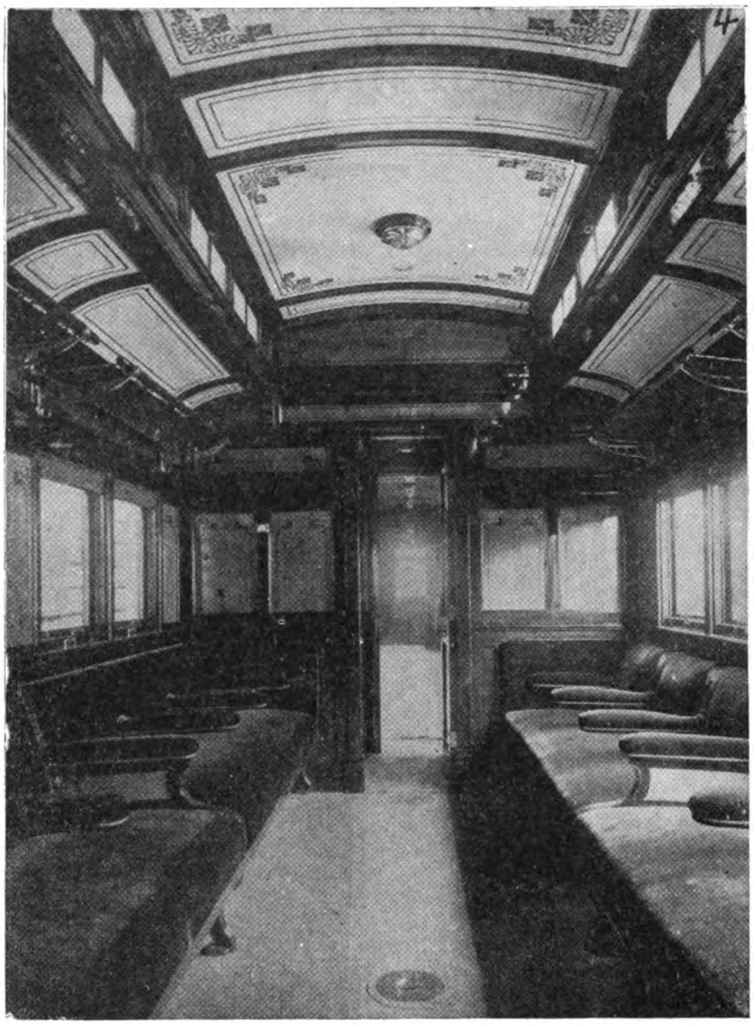
Dining Car, Interior View



Second Class Sleeping Car, Interior View

national régime, a 7-ton wagon with a capacity of 758 cub. ft. was the standard type, but in 1911-12 the width of the body was increased by 5 inches, the capacity being thereby enlarged to 801 cubic ft. and 9 tons. The vehicles built according to this type down to 1913-14 numbered 2,490. The underframes have recently been entirely rebuilt of steel. In view of the demand for wagons of greater loading capacity, the 10-ton standard axle was adopted for covered wagons with hand brakes built in 1913-14, the underframes of which were enlarged up to 23-ft. The wheel-base was also lengthened from 10-ft. to 13-ft.

In 1914-15, by an addition to the height, the capacity was further increased to 1,282 cubic ft., and in 1915-16, to 1,368 cubic ft. or 15 tons, by a substantial enlargement of the width. With a considerable gain in the section and an increase of about 35 per cent. in length, the dead weight increased only 50 per cent. as compared with 5 tons of the 7-ton cars, while the capacity was practically doubled. This 15-ton vehicle has been made the standard type for new construction.

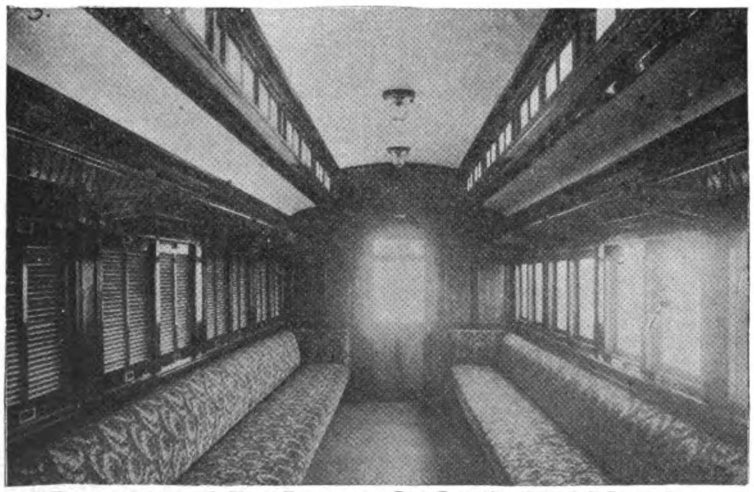


First and Second Class Passenger Car, Interior First Class Room

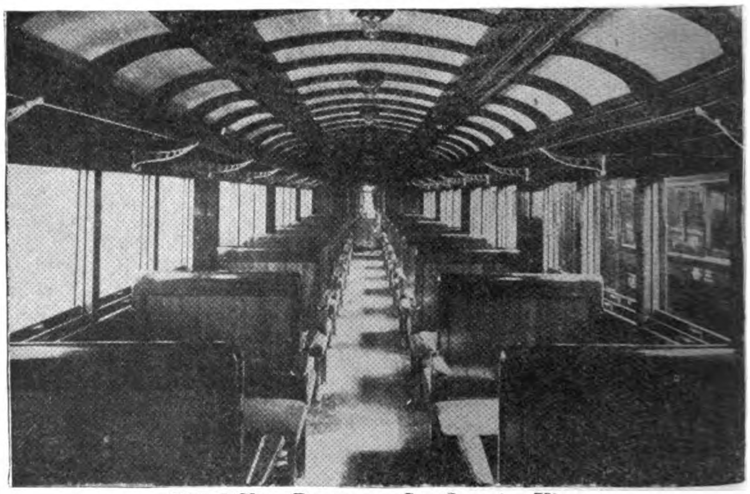
750 open trucks built in 1910-11 were practically of the same design as before the nationalization. They had a 5-ft. falling door on each side, the underframes being made of steel and wood combined which have since been rebuilt of steel. Frames of the same design as the 15-ton wagon were adopted for the new construction in 1914-15, which, compared with the standard type at the time of the nationalization, gains but slightly in width, but shows an increase of about 16-in. in height and 5-ft. in length. With an increase of only 40 per cent. in the dead weight, it has doubled the loading capacity of the older type. The design has been adopted as the standard type for later construction.

Coupling

After the nationalization, measures were taken for standardizing the "screw and link" coupling which was uniformly in use except in Hokkaido. Though the type was universal, the couplers themselves were

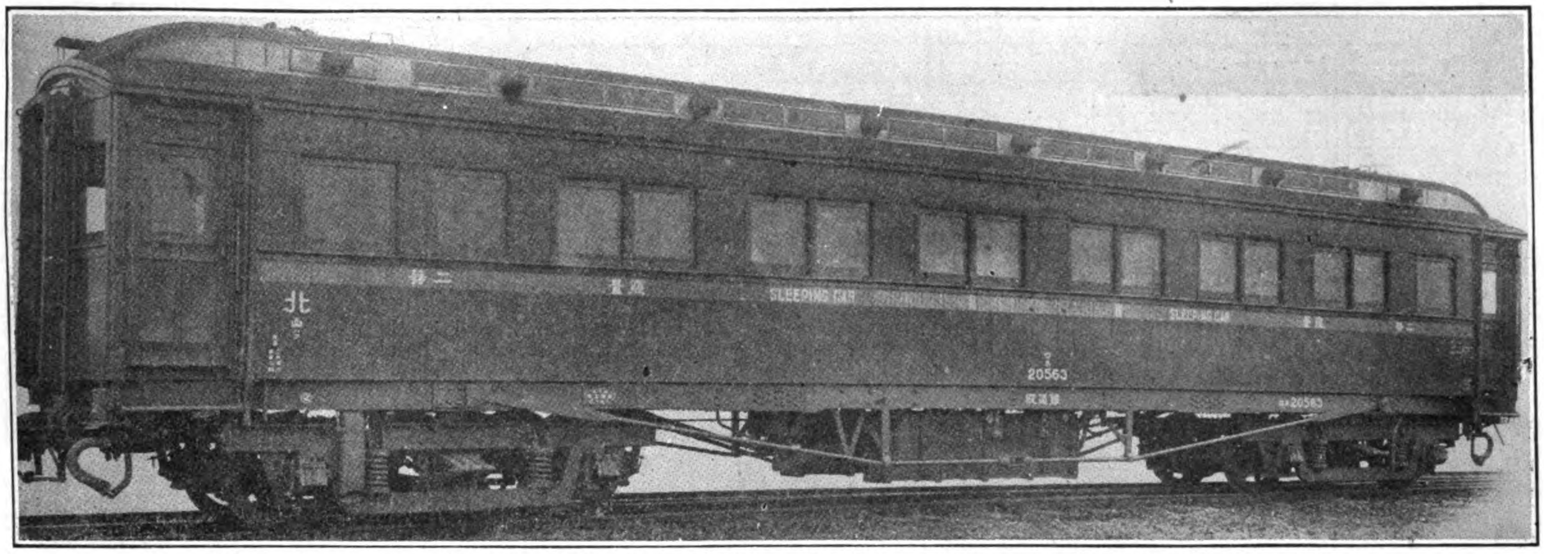


First and Second Class Passenger Car, Interior Second Class Room

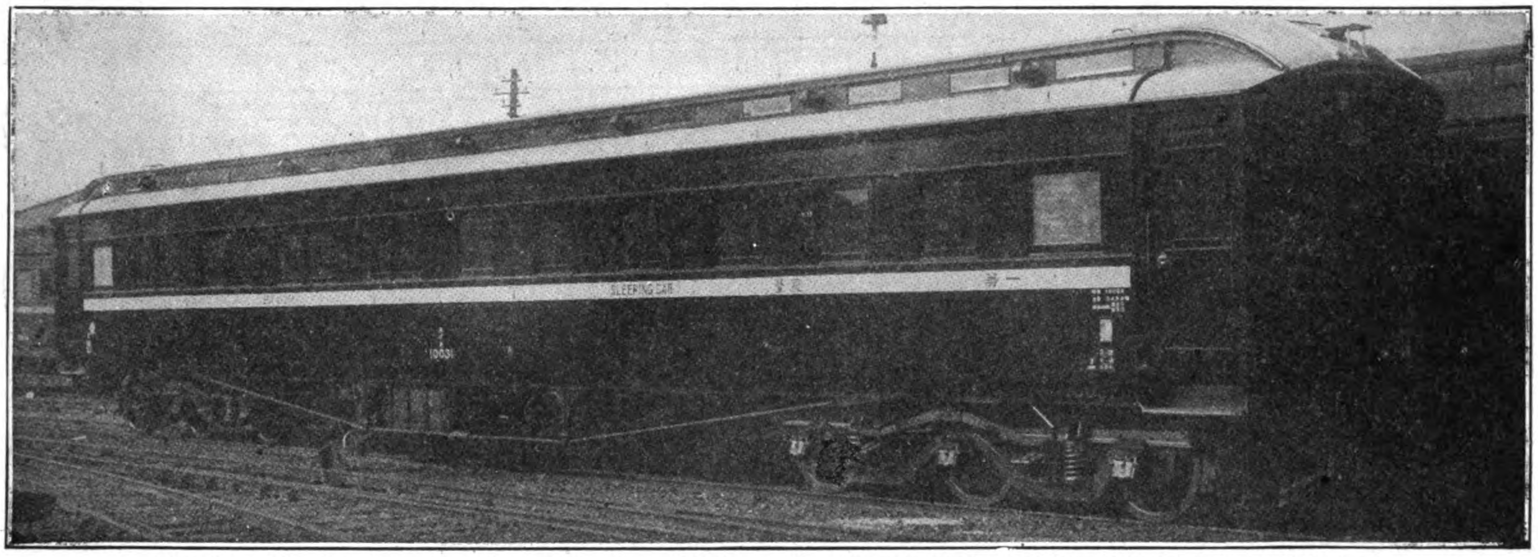


Third Class Passenger Car, Interior View

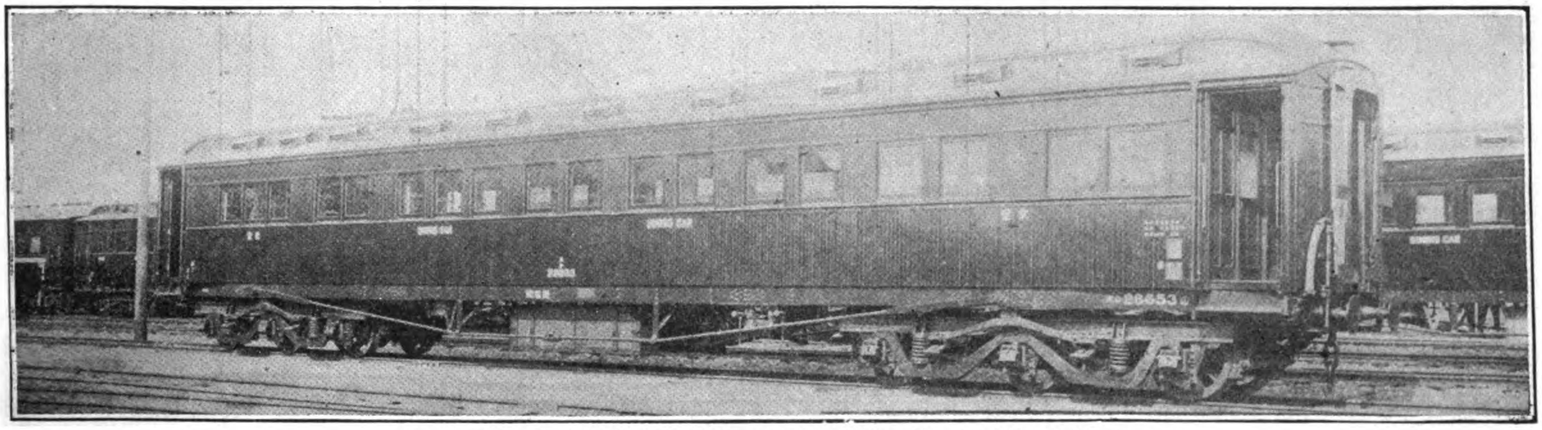
TYPES OF JAPANESE PASSENGER CARS



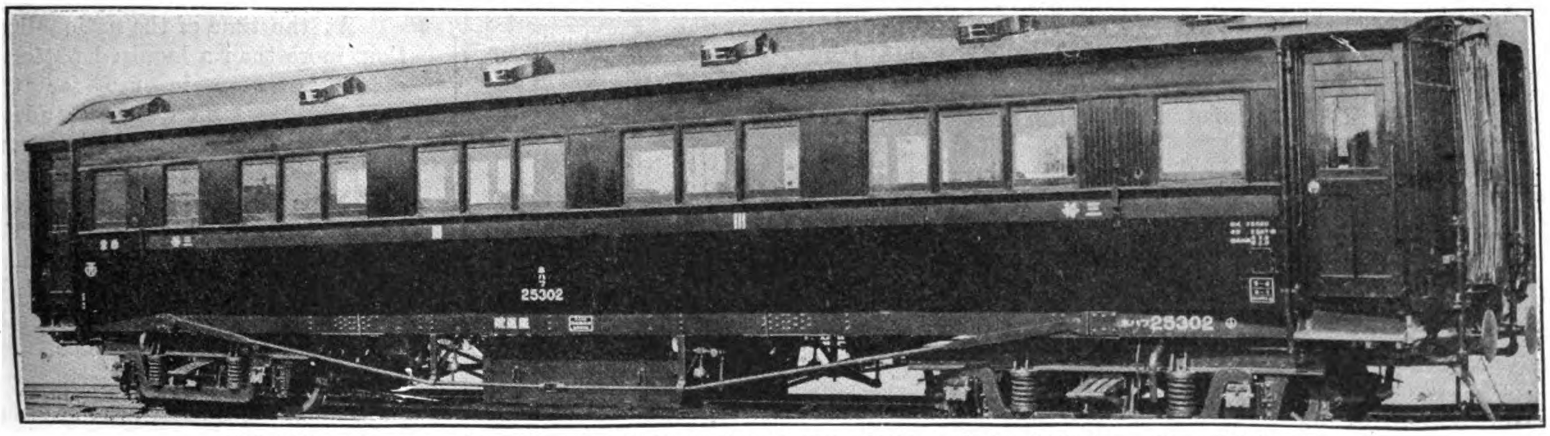
Second Class Sleeping Car. Capacity: 24 Berths and 36 Seats; Total Length, buffer to buffer, 56-ft. 2-in.; Tare, 29.0 tons



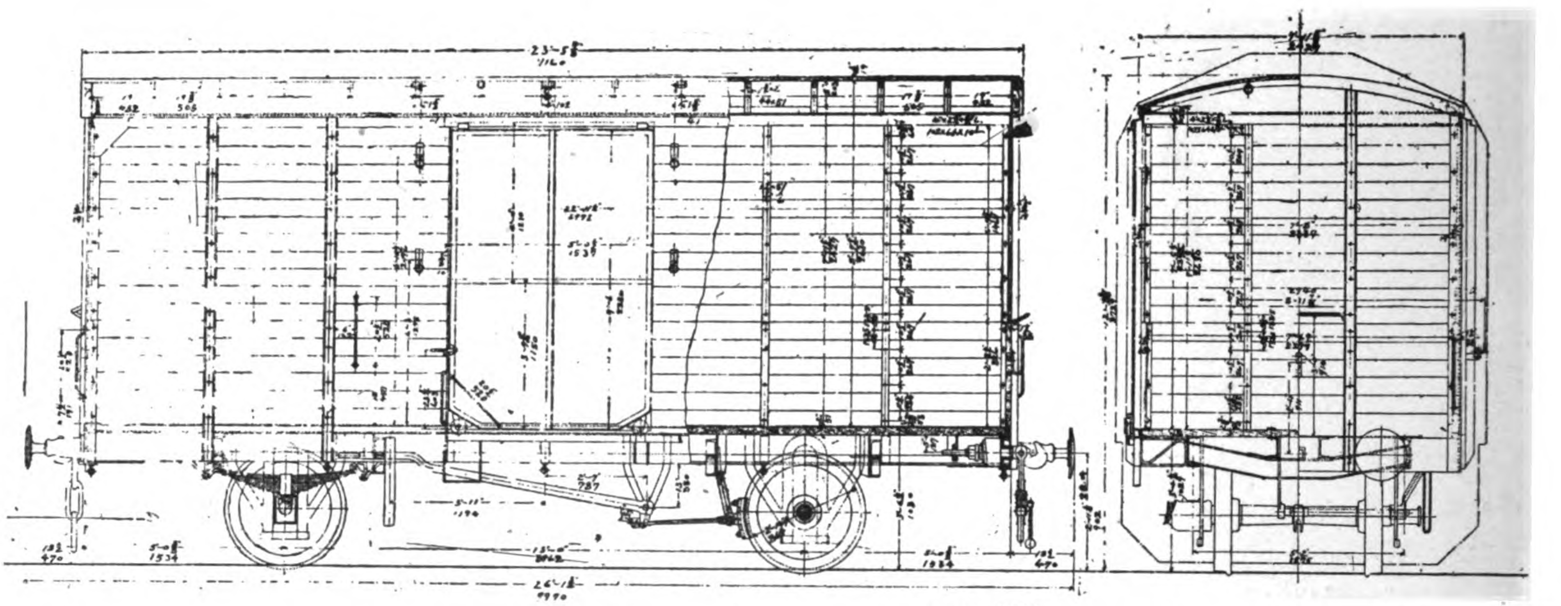
First Class Sleeping Car. Capacity: 22 Berths and 33 Seats; Total Length, buffer to buffer, 66-ft. 0-in.; Tare, 34.84 tons



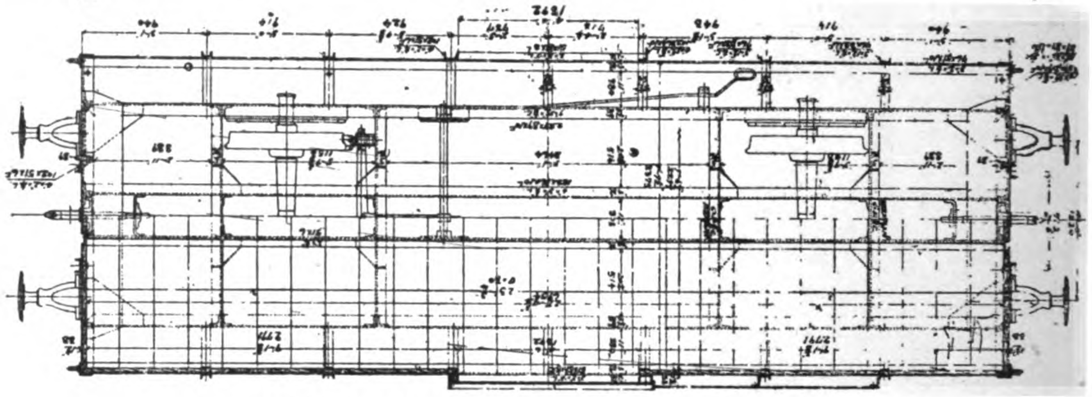
Dining Car. Total Length, buffer to buffer, 66-ft. 0-in; Weight, 32.68 tons



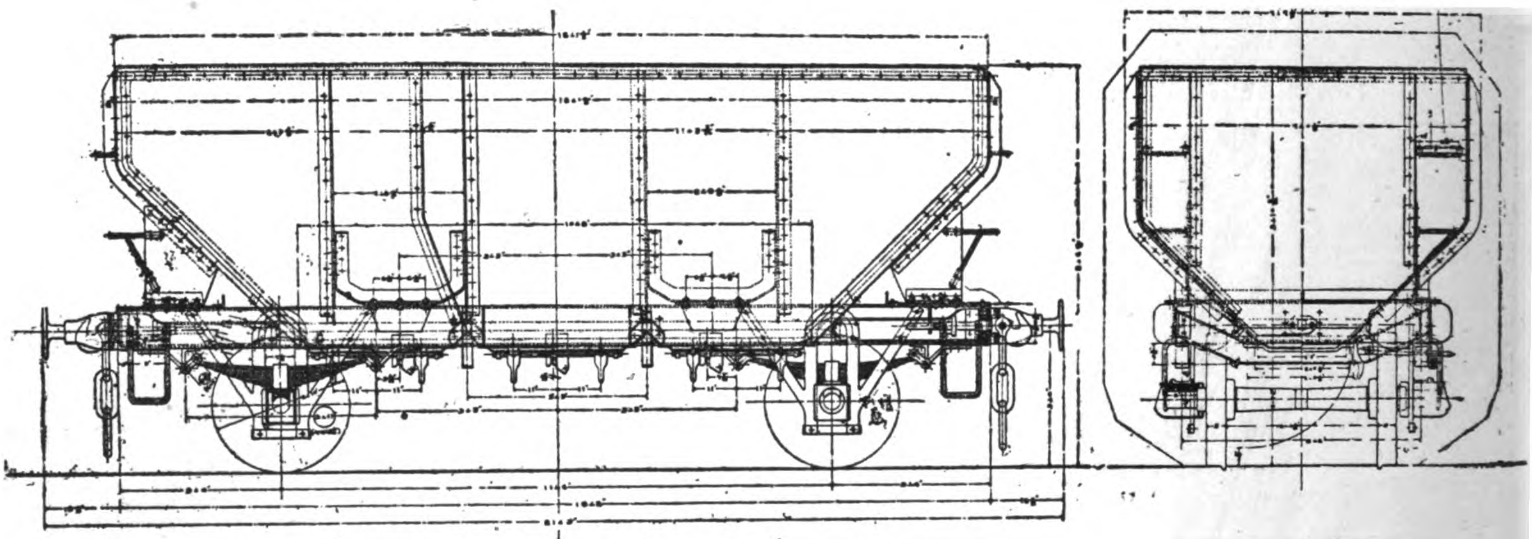
Third Class Passenger Car. Capacity: 72 Seats; Total Length, buffer to buffer, 55-ft. 6-in.; Tare, 25.67 tons

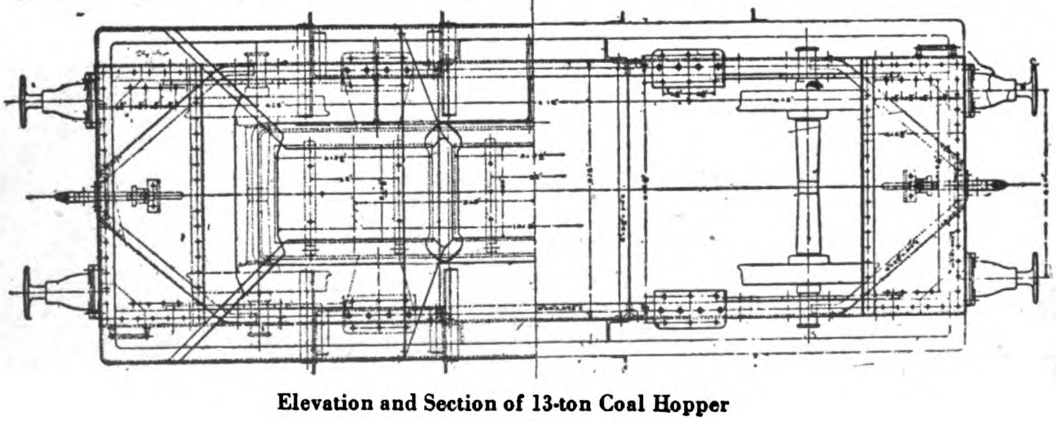


of divers dimensions, involving no small inconvenience in the process of coupling and uncoupling. In 1915-16 standard types were laid down for the coupling buffer and draw-bar. In the Island of Hokkaido, the pin and link couplings in use before the nationalization were standardized into the automatic buffer coupling.



Elevation and Section of 15-ton Covered Wagon (of 1 368 c.f. capacity)

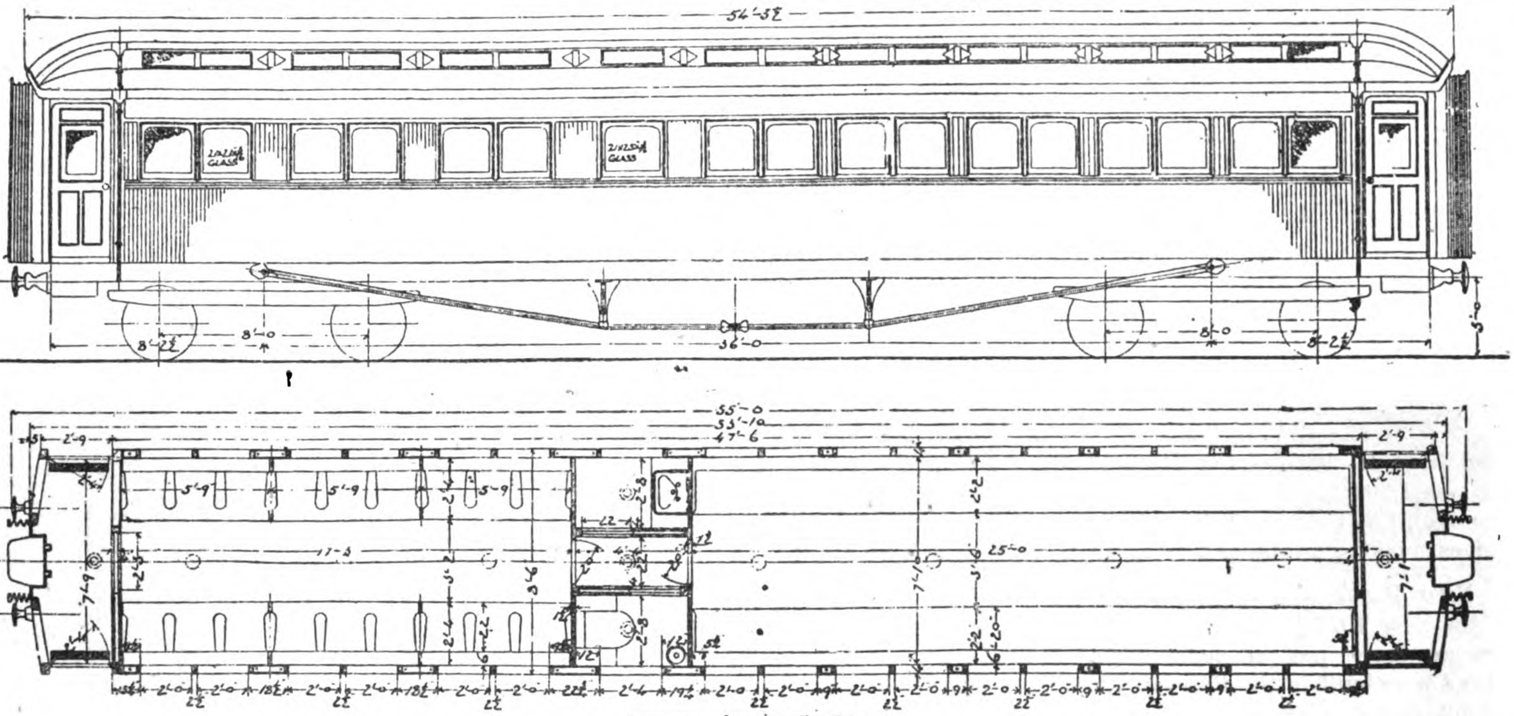




Elevation and Section of 13-ton Coal Hopper

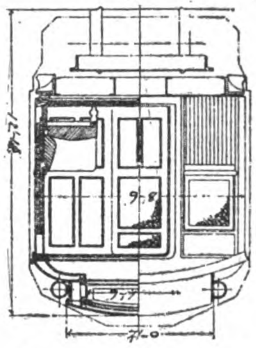
Axles

At the time of the nationalization, more than a hundred patterns of axles were in use for the vehicles. In April 1910, a standard axle was adopted for 7-ton and 10-ton vehicles and in accordance with this all the other dimensions have gradually been remodelled, The adoption of tyred wheels was also decided upon, the cast-iron and chilled wheels being gradually remodelled or replaced by steel.



NEW LOCOMOTIVES.—During the year 1917-18, 118 superheated tender locomotives were added to the stock. Of the number 6 were built in the Railway Works and the others under contract with home car-builders. Eight tank locomotives came into State possessions resultant upon the purchase of two private railways during the year under review.

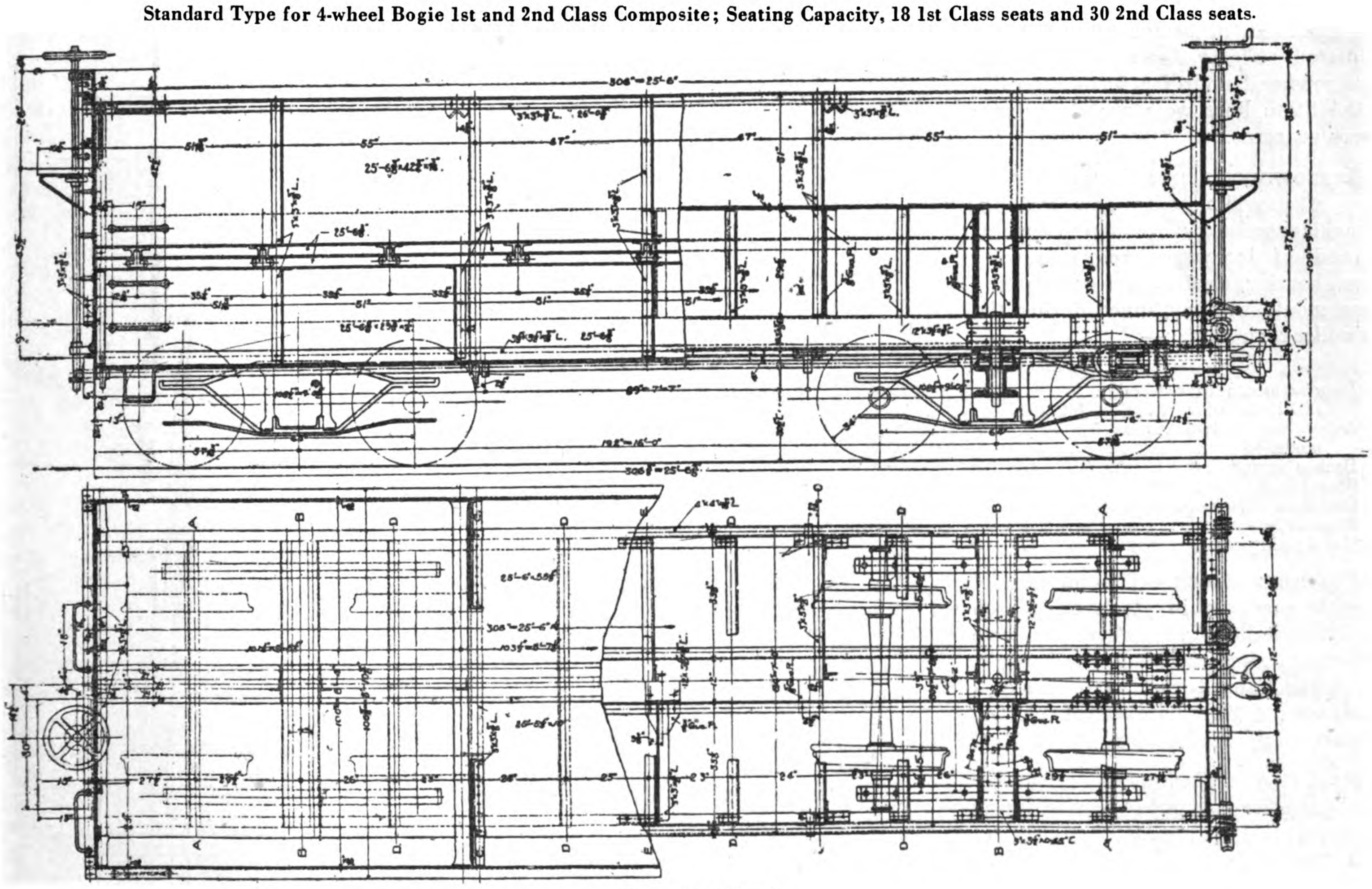
Ten tank and 3 tender locomotives, all obsolete were scrapped off, and 2 tank locomotives were sold, being unfit for use on the State Lines.



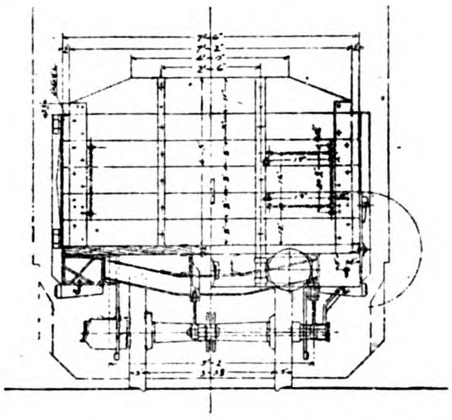
IMPROVEMENT IN LOCOMOTIVES.—During the year the boiler was remodelled for 16 engines, accessories to the boiler and tubes renewed for 68 engines, the cap remodelled for 16 engines, the automatic buffer coupler fitted for 19 engines, brakes renewed for 22 engines and steam-heaters for 29 engines. Besides 35 engines were in the repair shop to have the normal pressure increased and the cylinder diameter shortened.

LOCOMOTIVE STOCK.—The total number of

Standard Type for 4-wheel Bogie 1st and 2nd Class Composite; Seating Capacity, 18 1st Class seats and 30 2nd Class seats.



24-ton Coal Truck



locomotives on the books on March 31st, 1918 was 1,205 tanks (including seven 2′ 6″ gauge), 1,603 tenders, 12 electric locomotives, making a total of 2,820.

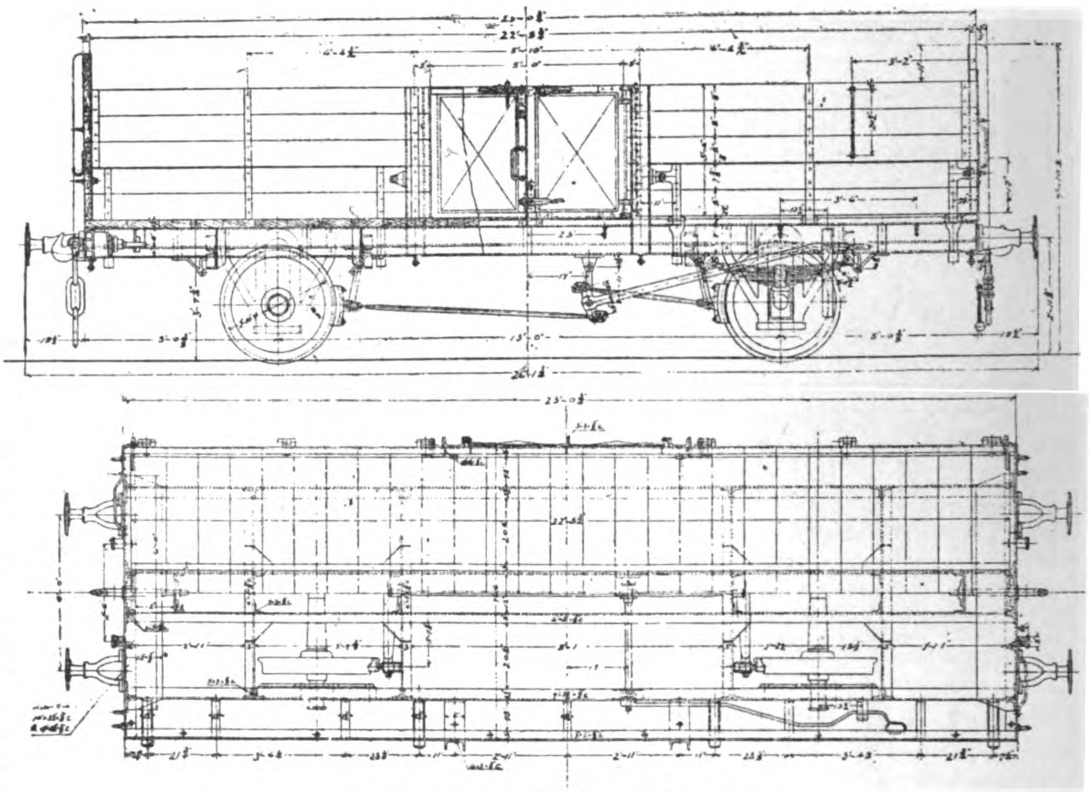
New Passenger Carriages.—During the year 1917-18, 56 new passenger carriages were put in commission, of which 4 were built in the Railway Works, and 52 under contract with home car-builders and the others made over from the purchased railways. Twenty-seven electric trams were added to the list. The car-bodies of these new trams were built in the Railway Works or under contract with home car-builders, while the electric equipment and the brakes were purchased from abroad and, erected in the Railway Works. 209 passenger carriages and 13 electric trams were constructed. Altogether 22 passenger carriages were struck off the list during the year having either been damaged in accidents or become antiquated. Thirty-three passenger carriages rendered unfit for further service on the State lines were sold to private railway concerns.

Improvements in Carriages.—The policy of providing with new and additional lavatories and ventilating apparatus and of increasing and improving brakes, heating, electric and gas lighting arrangemeuts was continued during the year under review, viz.:—

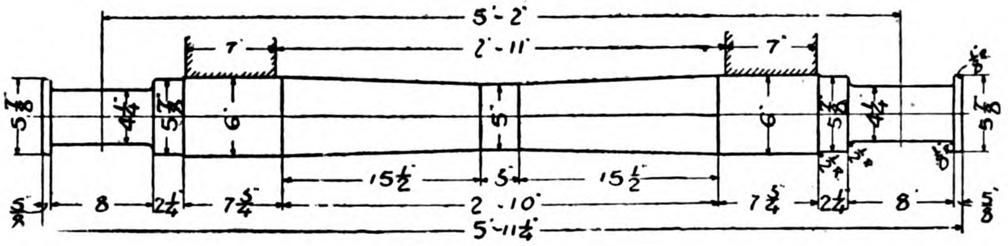
		No. of cars.
Improvements in car-body and its interior	for	209
Axles and axle-boxes remodelled	,,	2
Brakes remodelled	,,	48
Steam heaters remodelled...	,,	68
Cushions, curtains, etc. ...	,,	144
Electric lamps	,,	379
Gas lighting arrangements	,,	67

Coaching Stock.—The number of passenger carriages in stock on March 31st, 1918 totalled 6,731, which 444 were of 6-wheel bogie, 2,179 4-wheel bogie, 4,087 4-wheel and 6-wheel, and 20 steam motor cars. The number of electric trams was 152, all of 4-wheel bogie.

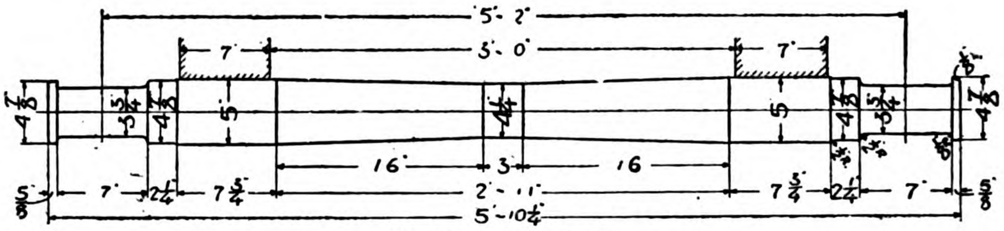
New Goods Wagons.—The number of new goods wagons put in service during the year 1917-18 amounted to 2,503, of which 244 were built in the Railway Works, 2,139 under contract with home car-builders, and the other 120 acquired through the purchase of private railways.



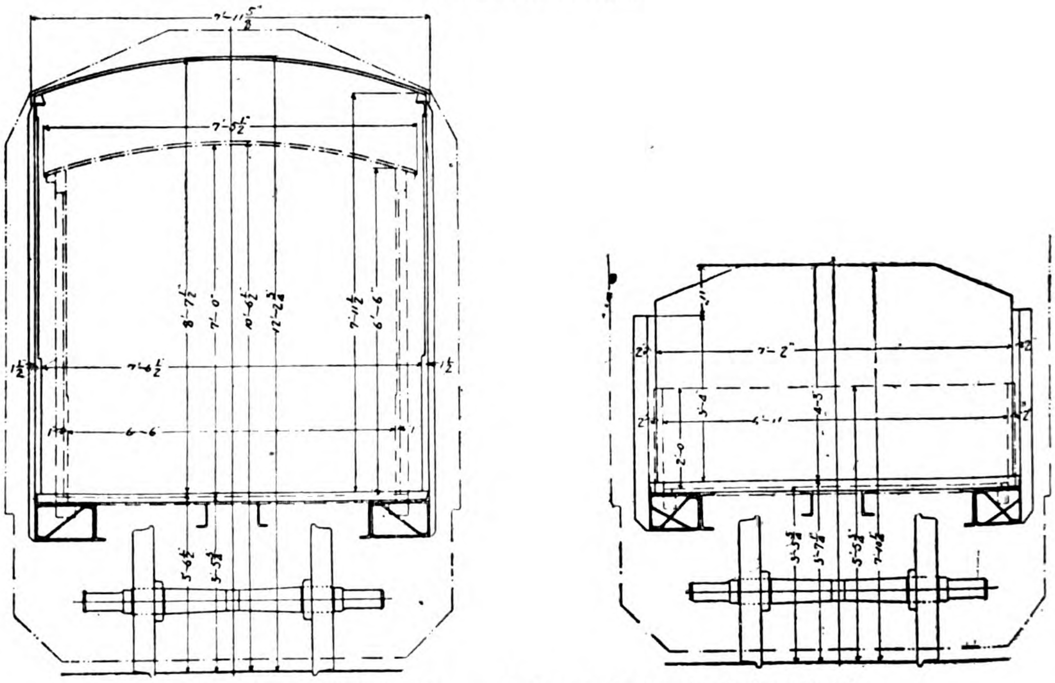
15-ton Open Truck (of 658 c.f. capacity)



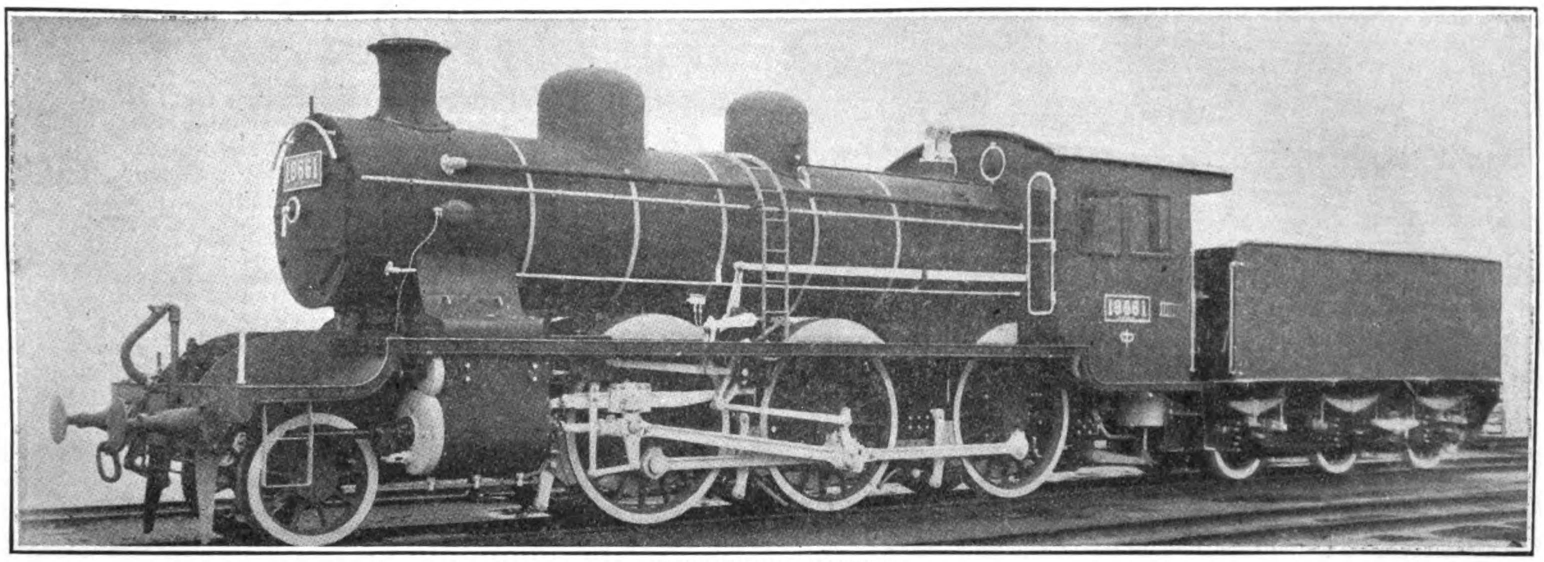
Standard 7-ton Axle



Standard 10-ton Axle



Elevations of Freight Wagons—before and after the Nationalization



PASSENGER ENGINE

Cylinders—18½″×24″	Steam pressure—180-lbs.	Water-heating surface—952 sq. ft.	Weight total engine—46.02 tons
Driving wheels, dia.—63″	Grate area—17.5 sq. ft.	Superheating surface—297 sq. ft.	Tractive force—19,900-lbs.

Locomotive and Shop Practice on the Japanese Railways

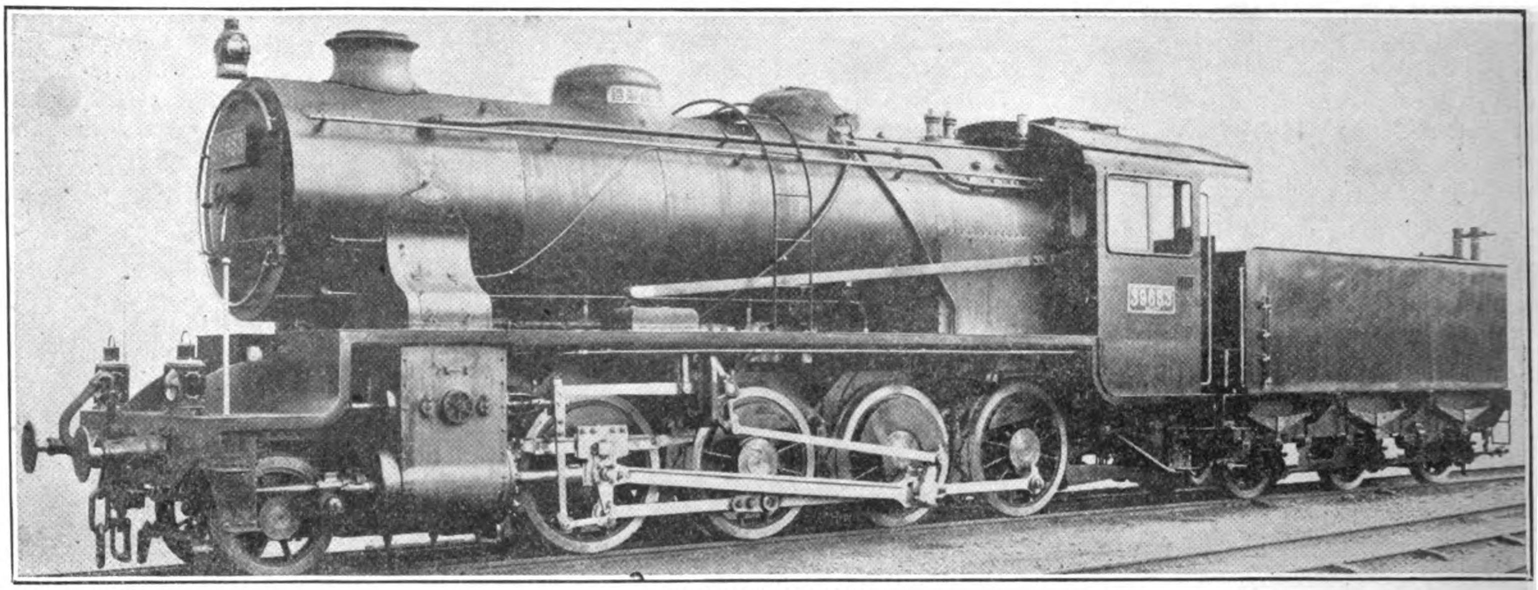
ONE of the features of Japanese locomotive practice during the ten years of government ownership and operation has been the general adoption of heavier and more powerful locomotive engines. The construction of Class 6700 (4–4–0) powerful passenger engines in 1910 marked the first step in this direction. Following this came the importation of some 4–6–0 passenger engines (Class 8700) from England and a number of superheater passenger locomotives of 4–6–0 type (Class 8800 and Class 8850) and 4–6–2 type (Class 8900) from the United States and Germany. The locomotive engine using superheated steam was thus introduced on Japan's railways and its efficiency and economic value were soon fully realized in actual train service on the Tokyo-Shimonoseki Line. In consequence, only a small number of saturated steam locomotives were built in 1912 and 1913, all the locomotives built since 1914 being equipped with superheaters. Among the several other classes adopted in 1912, the Class 4100 freight locomotives, with wheel arrangement of 0–10–0, were placed for a heavy mountain grade service on the O-U Line, and the result was very favorable. A number of Class 4110 engines, which were really the 4100 Class with improved boiler capacity, were built in 1913 and 1914.

The Mallet compound locomotives (0–6–6–0), which are represented by Classes 9750, 9800, and 9850, have not thrived much in Japan. Some of them were ordered from the United States and assigned to a very heavy grade service on the Tokaido Line. With their enormous hauling power, the Mallets have done a great deal in increasing the capacity of that mountain section, but on account of their complicated construction and heavier maintenance cost, the extensive employment of this type is considered unwise for a service where engines of simpler construction answer the purpose.

The standardization of locomotive design was another conspicuous feature in the recent practices of their railways. The three classes—9600, 6760, and 8620—were adopted as the standards for new locomotives, as they proved in actual service to be the best suitable for the traffic conditions prevailing on the state railways. The Class 9600 locomotives, the largest and most powerful consolidation locomotives ever built in Japan, are particularly good for slow freight and heavy grade passenger services; and the Class 6760 American type locomotives are generally assigned to local passenger trains and express trains of moderate weight, while the Class 8620 Mogul locomotives, though originally designed for passenger service, are found equally efficient in handling both express trains and freight trains. At present, locomotives belonging to these three classes are most extensively used on the state system, and it is the policy of the Japanese railways administration that all new locomotives should be built according to these standards, except some 0–10–0 type engines, which are to be assigned to certain extremely heavy mountain grades.

Interior of Erecting Shop at Hamamatsu Locomotive Works

An official report says: The nationalization of the railways gave no small impetus to the growth of Japan's locomotive industry, which was really in its infancy at that time. The domestic plants and works have, since then, steadily developed and have attained a high state of efficiency in the matter of production and workman-



FREIGHT ENGINE

Cylinders—20"×24" Steam pressure—180-lbs. Water-heating surface—1,414 sq. ft. Weight total engine—59.40 tons
Driving wheel, dia.—49" Grate area—25.0 sq. ft. Super-heating surface—347 sq. ft. Tractive force—29,900-lbs.

Built at the Hiogo Works of the Kawasaki Dockyard

ship, so that at present they are well qualified to take the place of their foreign compeers in filling new orders. Hundreds of our new powerful locomotives, belonging to the three standard classes previously referred to, have all been designed by our engineers and built in Japan. In short, our locomotive industry is no longer in a mere experimental stage; it has become quite firmly established.

Representative Locomotives

In the preceding paragraph we referred briefly to the general growth in capacity and the development of our locomotives. Here we shall compare the dimensions of our representative locomotives at the beginning of the government management with those of the engines at present in use, in order to show the advancement made in our locomotive practice.

Ten years ago, the most important express train on the Tokaido Line ran with only four or five bogie carriages coupled, but to-day the same express is composed of double the number of heavy cars and is running at a much higher speed. The following table shows the principal dimensions, etc., of the locomotives used in the express train service on the Tokaido Line ten years ago and of those used to-day :—

	Engines at the time of Nationalization	Engines of to-day
Class	6350	8850
Type	4-4-0	4-6-0
Cylinders, diameter and stroke	16 in. and 24 in.	18½ in. and 24 in.
Driving wheel diameter ...	5 ft.	5 ft. 3 in.
Boiler pressure	160 lbs. per sq. in.	180 lbs. per sq. in.
Grate area	14.3 sq. ft.	19.6 sq. ft.
Water-heating surface	875 sq. ft.	1,097 sq. ft.
Superheating surface	—	368 sq. ft.
Total heating surface	—	1,465 sq. ft.
Weight on drivers	20.14 tons	38.16 tons
Weight of engine, in working order	32.05 tons	54.62 tons
Weight of tender, loaded ...	24.06 tons	28.98 tons

From the marked difference in the dimensions as shown above, the relative hauling powers of the two may easily be judged. Assuming the train load of Class 6350 to be 150 tons and of Class 8850 to be 300 tons, the maximum sustained speeds of the engines on different gradients of track are estimated to be as follows :—

	Approximate maximum sustained speeds (miles per hour)	
	Class 6350 locomotives	Class 8850 locomotives
Level track...	53	60
1/150 up-grade	33	35
1/100 up-grade	25	25

We shall next show the comparative dimensions of Class 2120, which was the standard freight engine at the time of nationalization, and of Class 9600, the present standard freight locomotives.

	Engines at the time of Nationalization	Engines of to-day
Class	2120	9600
Type	0-6-2	2-8-0
Cylinders, diameter and stroke	16 in. and 24 in.	20 in. and 24 in.
Driving wheel diameter ...	4 ft. 1 in.	4 ft. 1. in.
Boiler pressure	160 lbs. per sq. in.	180 lbs. per sq. in.
Grate area	14.1 sq. ft.	25.0 sq. ft.
Water-heating surface	1,000 sq. ft.	1,376 sq. ft.
Superheating surface	—	363 sq. ft.
Total heating surface	1,000 sq. ft.	1,739 sq. ft.
Weight on drivers	39.95 tons	51.90 tons
Weight of engine, in working order	48.98 tons	59.40 tons
Weight of tender, loaded ...	—	30.03 tons

The tractive capacities of these engines on different grades and at different speeds are estimated as follows :—

	Train Load behind (tender) Drawbar	
	Class 2120	Clsss 9600
Speed	15 miles per hour.	19 miles per hour.
1/100 up-grade	270 tons	540 tons
1/40 up-grade	100 tons	200 tons

As previously mentioned, the tractive capacity of our motive power has been more than doubled within the ten years. It need scarcely be added that this phenomenal progress, though undoubtedly attributable in the main to the steadily increasing volume of traffic in recent years, must have materially accelerated the development of our industries and ultimately of traffic.

Lastly, the general dimensions and weight of the heaviest engines in service at the time of nationalization and of those at present in use are shown as under.

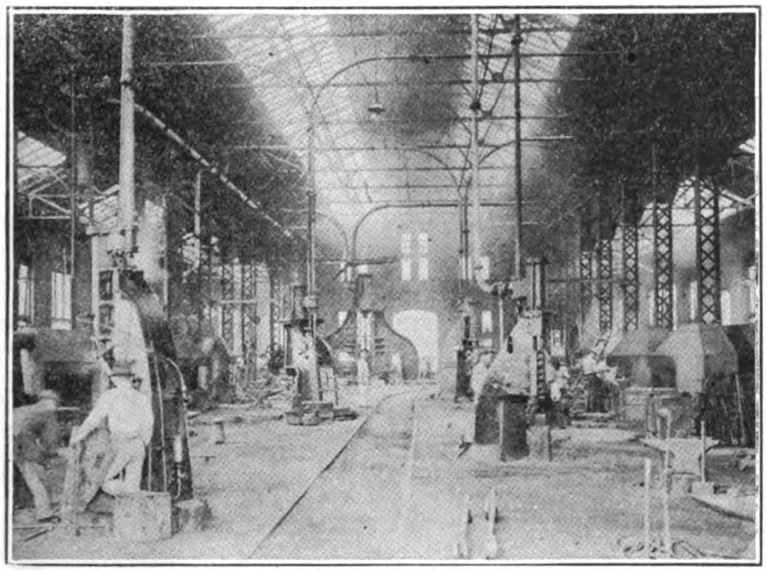
	Engines at the time of Nationalization	Engines of to-day	
	Heaviest in weight on drivers and in total weight	Heaviest in weight on drivers	Heaviest in total weight
Class	9400	9850	8900
Type	2-8-0	0-6-6-0	4-6-2
Cylinders, diameter and stroke	18 in. and 24 in.	16½ in., 24 in. and 25½ in.	18½ in. and 24 in.
Driving wheel diameter ...	3 ft. 8 in.	4 ft. 1 in.	5 ft. 3 in.
Boiler pressure	180 lbs. per sq. in.	200 lbs. per sq. in.	180 lbs. per sq. in.
Grate area	25 sq. ft.	21 sq. ft.	27.2 sq. ft.
Water-heating surface	1,795 sq. ft.	1,452 sq. ft.	1,409 sq. ft.
Superheating surface	—	340 sq. ft.	320 sq. ft.
Total heating surface	1,795 sq. ft.	1,792 sq. ft.	1,729 sq. ft.
Weight of engine, in working order	54.62 tons	68.12 tons	62,40 tons
Weight of tender, loaded ...	34.87 tons	30.12 tons	39.69 tons
Total weight of engine and tender...	89.49 tons	98.24 tons	102.09 tons
Weight on drivers	47.52 tons	68.12 tons	38.46 tons

The comparison of the heaviest engines in service, then and now, will indicate that, measured in terms of tons, the development of our locomotive power has not been very considerable. It may be easily inferred, however, that both as regards hauling capacity and efficiency the new engines show a marked improvement on their predecessors.

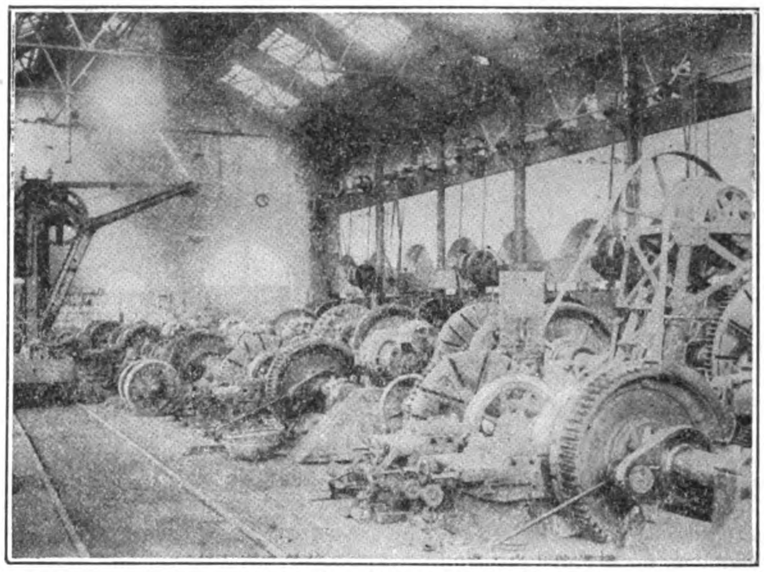
Design of Locomotives

In designing locomotive engines of greater tractive force and higher speed to meet the rapidly growing traffic, our locomotive designers are now seriously hampered by the limitations imposed by the narrow gauge, which does not easily admit of enlargement of the fire-grate, increase in the diameter of drivers, or the providing of the necessary space for the lateral play of driving wheels.

With the exception of engines provided with a trailing-truck, the fire-box is generally placed between the pair of driving wheels and the width of the fire-grate is, therefore, limited by the inside distance between the pair of driving wheels. In the case of locomotives for 3-ft. 6-in. gauge tracks, the fire-box cannot be made wider than 2-ft. $3\frac{1}{2}$-in. with a maximum grate area of about 20 sq. ft. In order, therefore, to adopt a fire-grate of greater area, it is necessary either to provide trailing-trucks or to contrive the frame so that the fire-box can be located over the driving wheels.



Interior of Smithy, Omiya Works



Interior of Machine Shop at Omiya Works

The provision of trailing-trucks involves a more complicated construction of locomotives, not to speak of the possible interference with the construction of the ash-pan, seeing that on narrow gauge tracks an ample allowance must be provided for the lateral movement of the truck wheels. If, however, the fire-box be placed over the drivers, the centre line of the whole boiler may be extremely elevated, and this, in turn, may increase the risk of possible upsetting of the engines. In our practice we follow the latter method and make the wheel arrangement as simple as possible, by raising the boiler centre within its safe limit. For instance, in the case of Class 9600 and Class 4110 engines, the fire-box is placed over the rear pair of driving wheels, and the centres raised to heights of 8-ft. 6-in. and 8-ft. 5-in. respectively above the rails. This is probably the highest centre among the locomotive boilers ever built for 3-ft. 6-in. gauge tracks, and indeed even on the 4-ft. $8\frac{1}{2}$-in. gauge railroads such a great value for the ratio of the centre height to the gauge may possibly be without precedent. With this high boiler centre, safe working may be ensured for a freight locomotive with drivers of 4-ft. 1-in. diameter, but not for an express passenger engine, which has a much larger driving wheel and runs at much higher speeds. For example, if, in a locomotive with 5-ft. 3-in. diameter, the boiler centre be made 8-ft. high, the centre of gravity of the engine may be approximately equal in height to that of the freight engines just mentioned, and may therefore not be safe for high speed service. This explains why the provision of trailing-trucks becomes imperative when a fire-grate greater than 20 sq. ft. is required by a high speed passenger locomotive.

The demand for greater speed has necessitated the use of larger driving wheels. At the time of nationalization, 5-ft. was the standard diameter for the express engines, but in the locomotives of later design this was increased to 5-ft. 3-in., which is the largest in our present practice. The employment of trailing-trucks may possibly allow the engine to have larger driving wheels, but for a narrow gauge locomotive it would be very difficult, if not impossible, to have driving wheels greater than 6-ft. in diameter.

In this connection, one thing that deserves mention would be the use of the two-wheel leading truck of Class 8620 engines (2–6–0) coupled with the front pair of driving wheels to make it serve as an ordinary four-wheel swivelling truck or bogie. In principle this contrivance resembles the Zara system, but the detail design is our own device.

Railway Workshops

The consolidation of the railways served as an occasion for completely reorganizing the railway workshops with a view to increasing their efficiency. It enabled the railway management to readjust the distribution of work among the plants located in different parts of the system, and thereby ensure the concentration of work, the full advantage of production on a large scale being thus gained.

Under the régime of diversified control, each railway had its own shops for the manufacture and maintenancle of equipment For convenience in getting the requisite supply of abor and material, these railway plants were generally centred in the large cities, in most cases at termini or junctions of the leading lines, as may be illustrated by the Shimbashi and the Omiya workshops centred about Tokyo; the Kobe, the Hyogo, and the Takatori workshops about Kobe;- the Kokura, the Yukuhashi, and the Wakamatsu workshops in the northern part of Kyushu; and the Temiya, the Iwamizawa, and the Asahigawa in the western part of Hokkaido.

This state of affairs had to be completely altered after the nationalization. In effecting the redistribution of the railway plants, the railway management had to look at the matter from the point of view of the railway interest as a whole, and, as a result, radical renovation was effected in this direction during the ten years under review. Thus the ten leading plants, or practically half the whole number—Nagaoka, Numazu, Shimbashi, Hyogo, Kobe, Ikeda, Hiroshima, Yukuhashi, Temiya and Iwamizawa—were closed down, while eight new plants were created at Tsuchizaki, Oi, Hamamatsu, Kanazawa, Yonago, Naebo, Hakodate, and Kushiro, and five

detached plants at Sumidagawa, Shiodome, Nagoya, Tokushima, and Wanishi.

On March 31, 1917, there were 20 plants and 5 detached plants in operation, distributed as under :—

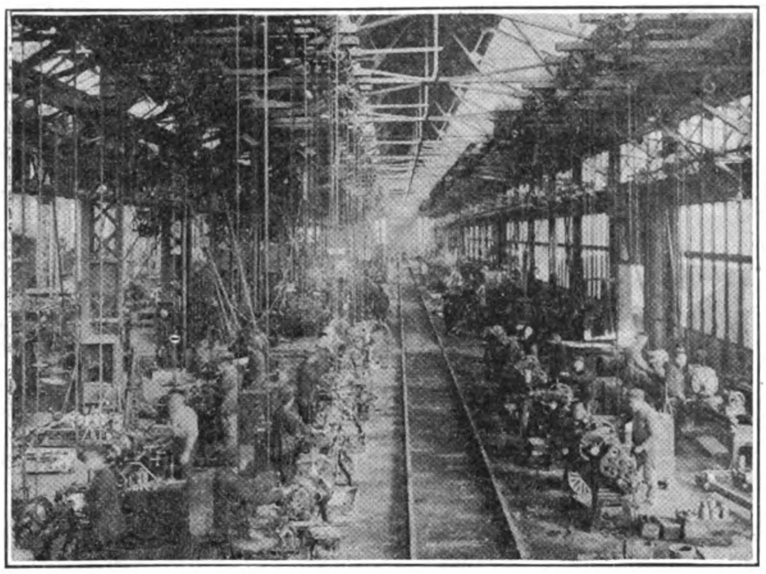
Main Island—Omiya, Nagano, Tsuchizaki, Morioka, Kinshicho, Oi, Hamamatsu, Yokkaichi, Kanazawa, Takatori, Minatomachi, Yonago, Shimonoseki, Sumidagawa (detached), Shiodome (detached), Nagoya (detached).

Shikoku—Tadotsu and Tokushima (detached).

Kyushu—Kokura and Wakamatsu.

Hokkaido—Naebo, Hakodate, Asahigawa, Kushiro, Wanishi (detached).

At the time of nationalization, owing to the imperfect development of the Japanese industry, the railways had to depend solely upon foreign manufacture for the supply of locomotive stock, only the manufacture of new carriages and wagons being undertaken at the railway workshops. Under the new régime the policy of supporting and helping forward the progress of domestic industry has been consistently pursued, and it was not long before the native car-builders attained greater efficiency in workmanship and capacity. By 1912-13 the entire orders for new equipment could be placed with the domestic plants, and the railway workshops could devote themselves to the repair of equipment, save for the manufacture of certain special cars.



Interior of Machine Shop at Hamamatsu Locomotive Works

At the same time arrangements were made for ensuring the prompt repair of equipment in the shops. The limits of each plant for repair purposes were defined according to its capacity, and each was made responsible for the maintenance of the equipment in its own charge. The assignment of a definite amount of work to each plant has greatly added to its efficiency, and the number of cars detained in shops for repair has appreciably decreased.

Side by side with the repair work, a certain fixed standard was also laid down for limiting the number of goods vehicles to be returned monthly to each shop, the idea being to adjust the distribution of cars according to the requirements of traffic. The arrangement had the highly satisfactory effect of securing the efficient use of labor and workshop equipment, while on the other hand it increased the efficiency of car performance and ensured a longer term of service for the vehicles.

In assigning the limits of charge for each plant, special attention was directed to the concentration of the repair work of engines in the larger shops, with a view to eliminating the duplication of workshop equipment and facilitating their conveyance for repair. As arranged at present, twelve of the existing 20 plants have provision for the repair of engines and cars ; one attends exclusively to the repair of engines ; and the remaining seven are devoted to the repair of cars only.

As an illustration showing the increase in labor efficiency after the reorganization of the plants, the following figures, indicating the amount of repair work carried out in the shops, as compared with the number of days' work expended on it, may be recorded :—

Year ending March 31	1911	1917	Inc. or dec. (▵)	%
Locomotives (total weight in tons)	109,087	158,305	49,218	45
Carriages (seating capacity)	221,170	297,281	76,111	35
Wagons (loading capacity in tons)	258,270	427,313	169,043	65
No. of days' work	2,657,504	2,569,427	▵ 88,077	▵ .3

From the above it will be seen that, under the revised arrangements, a labor force 3 per cent. less was enabled to perform a work practically 50 per cent. greater than it achieved seven years ago.

The following statement summarizes the workshops and workmen at the end of each fiscal year during the decade :—

Year ending March 31	No. of work-shops	No. of work-men	No. of days' work	No. of days' work reduced	Wagons	Average wages per day per man
					yen	yen
1908 ...	22	12,930	—	3,747,238	2,420,089	.646
1909 ...	23	14,039	—	4.159,204	2,726,842	.656
1910 ...	23	13,322	3,732,804	3,900,864	2,642,855	.678
1911 ...	23	14,143	4,177,235	4,444,228	2,961,035	.666
1912 ...	24	15,658	4,670,762	5,149,314	3,383,514	.657
1913 ...	24	16,638	5,100,365	5,613,286	3,710,769	.733
1914 ...	17	17,026	5,335,578	5,267,433	3,512,294	.710
1915 ...	17	15,475	4,564,790	4,733,769	3,226,748	.707
1916 ...	23	14,176	4,289,563	4,434,376	3,052,741	,712
1917 ...	20	13,484	3,867,452	4,096,072	2,900,541	.750

N.B.—"No. of workmen" represents the average number as returned at the end of each month during the year.

"No. of days' work" is computed by multiplying No. of workmen at work by No. of working days.

"No. of days' work reduced" represents the results obtained by counting one day's work as 10 hours, a workman working for 15 hours per day being counted as doing 1½ days' work.

Canton's Peanut Trade

In view of the agitation in the United States to bar from importation Chinese peanuts, the following report of U. S. consul-general Bergholz, Canton, will be of interest :—

Of the local production of 200,000 tons, about 60 per cent. is used for food, 5 per cent. for making candy, 5 per cent. for export, and the remaining 20 per cent—that is, the poorer quality which sells for half the quoted prices—goes to the oil factories. Dealers consider that the peanuts from Kwantung run the richest in oil, followed by those of Honan, Chihli, and Shantung in the order named. The nuts poorest in oil come from Siam and are imported only when the supply from other provinces in the Republic cannot meet the demand. In 1913, 4,894 tons of shelled peanuts valued at $245,097 were exported to Hongkong for transhipment elsewhere. Neither the countries of ultimate destination nor the countries of origin of imports are given in the maritime customs returns from which these figures are taken. In 1918 the export was 373 tons valued at $30,299 and in 1919, 325 tons worth $31,927. The export of shelled peanuts was insignificant.

According to the maritime customs returns, the export of peanut oil abroad in 1918 and 1919 amounted to 182,532-lb., valued at $25,267, and 958,666-lb., valued at $126,004, respectively. The importation from foreign countries was 55,600-lb., worth $5,210, and 25,323-lb., valued at $2,404, respectively. No peanut oil was imported from other ports in China. The quantity brought into the province by inland routes cannot be ascertained.

The town of Sawankaloke on the Meh Tom

The Siamese State Railways

Conversion from Standard to Metre Gauge Now Under Way

THE twenty-third annual report of the Siamese state railways, covering the period, April 1, 1919 to March 31, 1920, has been presented by General Purachatra, commissioner-general, to Honorable Chao Phya Wongsa Nuprabadh, minister of communications; and it contains very interesting data regarding the conversion of the state lines from the 1.435 m. standard to metre gauge. Details:

NEW LINES UNDER SURVEY.—On May 7, 1919, a royal decree was promulgated authorizing the survey of a line from Petriew to Aranya Pradesa, a place within a few kilometres of the Cambodian frontier. On November 8, 1919, another royal decree was issued authorizing the survey of another line with a view to extending the existing Korat line to Ubol Rajdhani.

UNIFICATION OF GAUGE.—Decision has also been given for the unification of gauge, that is to say, all new state railway lines to be built to metre gauge, and all existing 1.435 m. or standard gauge lines to be converted into metre gauge within a period of ten years. This conversion will bring the Siamese state railway lines into uniformity of gauge with the railways of all the neighboring countries, *i.e.*, British Malaya, French Indo-China, and Burma.

BRIDGE ACROSS MENAM CHAO PHYA.—In connection with the scheme for unification of gauge, plans are to be prepared for joining up the state railway lines on the east and west banks of the Menam Chao Phya by means of a steel bridge, across the river, and for this purpose, a royal decree was promulgated on January 16, 1920, defining the zone of survey of the new line.

WORK OF CONSTRUCTION AND SURVEY.—Work of construction on the northern and southern lines proceeded satisfactorily during the year, in the case of the northern line railhead reached Km. 651/842, and on the southern line railhead reached the Sungei Golok River on the Siam-Kelantan boundary on March 31. Survey work on the eastern and north-eastern lines extensions was commenced immediately the royal decrees were issued, and where the lines have been definitely located, passing through unoccupied or undisputed lands, a certain amount of earthwork has also been begun. A survey party is working upon the line crossing the Chao Phya river, and it is hoped that definite location will soon be made.

WORK OF THE ROYAL ENGINEERS.—The administration of the state railways greatly appreciates the value of the help given by the railway batallion of the royal engineers, who have undertaken the work of platelaying on the northern line, and whose rate of progress in this work has been astonishingly good.

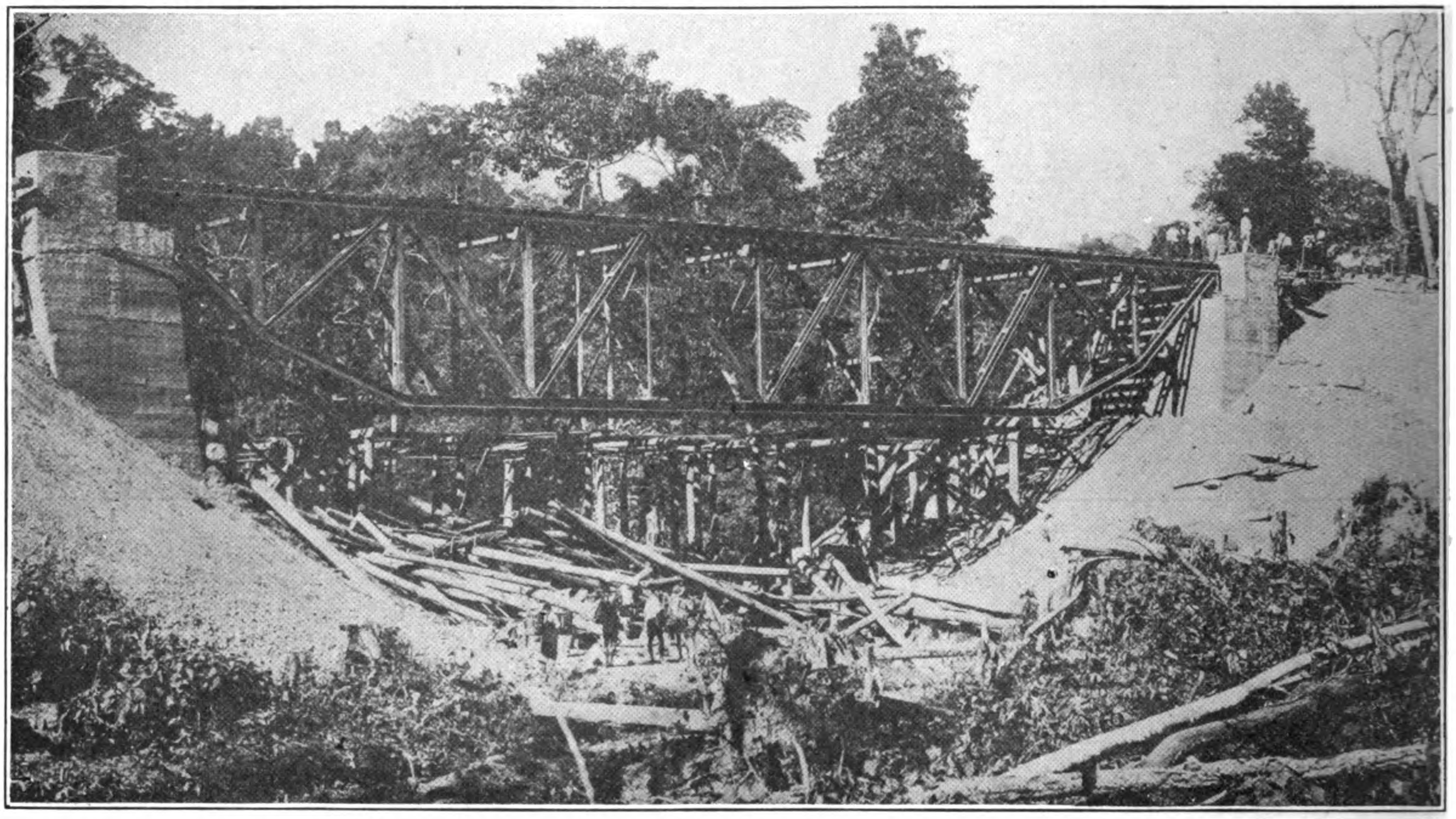
PERSONNEL OF THE STATE RAILWAYS.—Total of the staff and labor of all classes in the department at the close of the year was 9,132 distributed in the various services as follows:—

	Siamese	Europeans	Chinese	Indians	Others	Total
Central Administration ...	67	5	—	2	1	75
Construction Staff ...	1,474	6	1,023	10	18	2,531
Maintenance Staff ...	3,096	5	159	5	12	3,277
Mechanical Service ...	1,210	8	342	5	25	1,590
Traffic Service	1,322	1	39	23	4	1,389
Accounts Service	207	1	9	2	1	220
Stores Service	50	—	—	—	—	50
Total	7,426	26	1,572	47	61	9,132

SUMMARY COMPARATIVE STATISTICS.—The following is a summary of comparative statistics of the state railway lines during the years 1919-1920 and 1918-1919:—

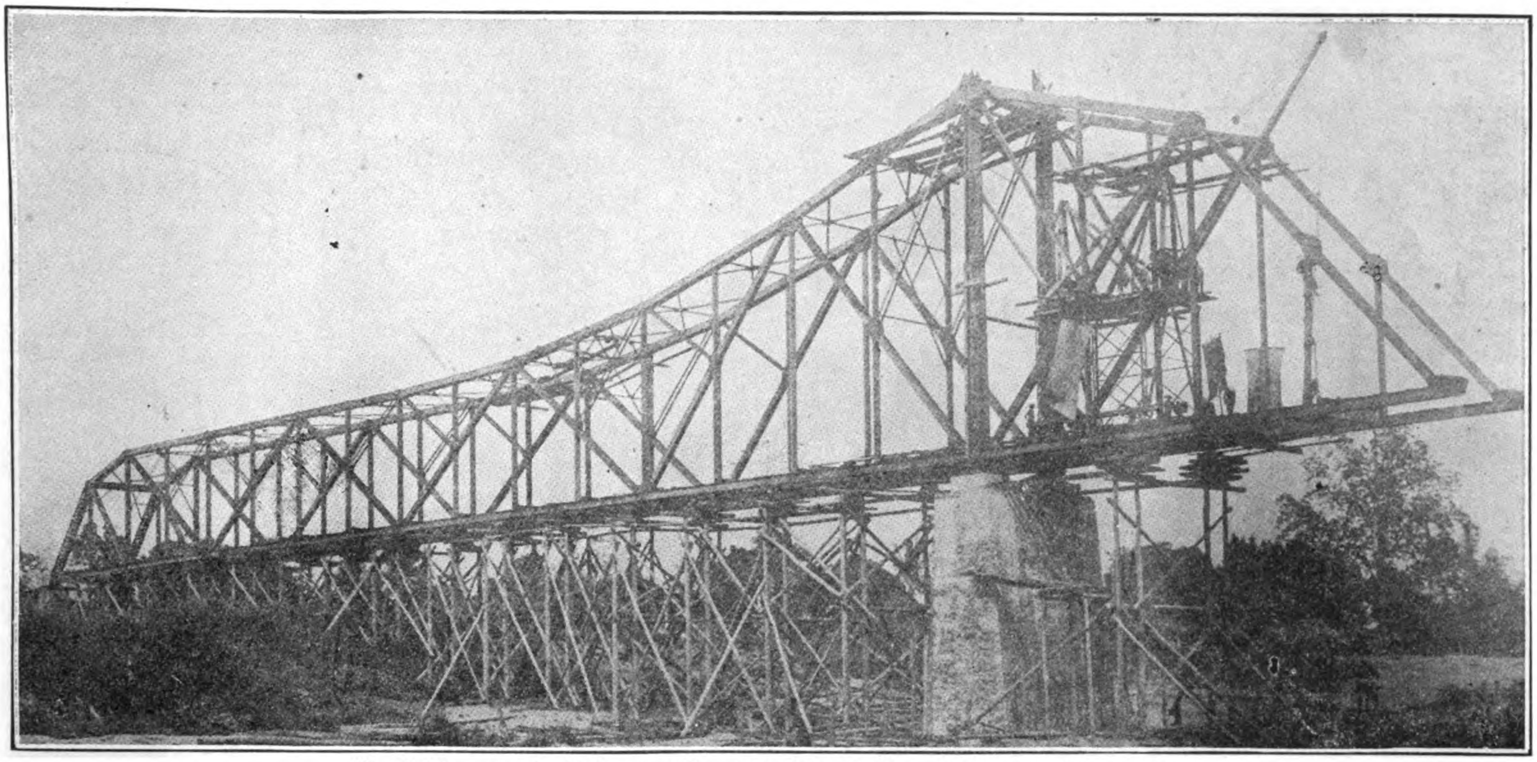
		1919-1920		1918-1919
Length of State Lines opened	Kms.	2,215	Kms.	2,215
Length of Lines under Construction	,,	211	,,	161
Length of Lines under Survey	,,	460	,,	Nil
Total length of State Lines opened and sanctioned ...	,,	2,886	,,	2,376
Total Capital	Tcs.	120,824,034	Tcs.	117,019,033
Average Capital cost per Km. of Open line	,,	54,548	,,	52,830
Gross Earnings...	,,	10,257,942	,,	9,254,189
Working Expenses	,,	4,682,624	,,	5,010,091
Net Receipts	,,	5,575,318	,,	4,244,098
Percentage of Working Expenses to Gross Receipts ...		45.65%		54.14%
Percentge of Net Receipts to Capital after deducting Renovation Fund		4.11%		3.13%

BUILDING NEW SIAMESE STATE RAILWAYS



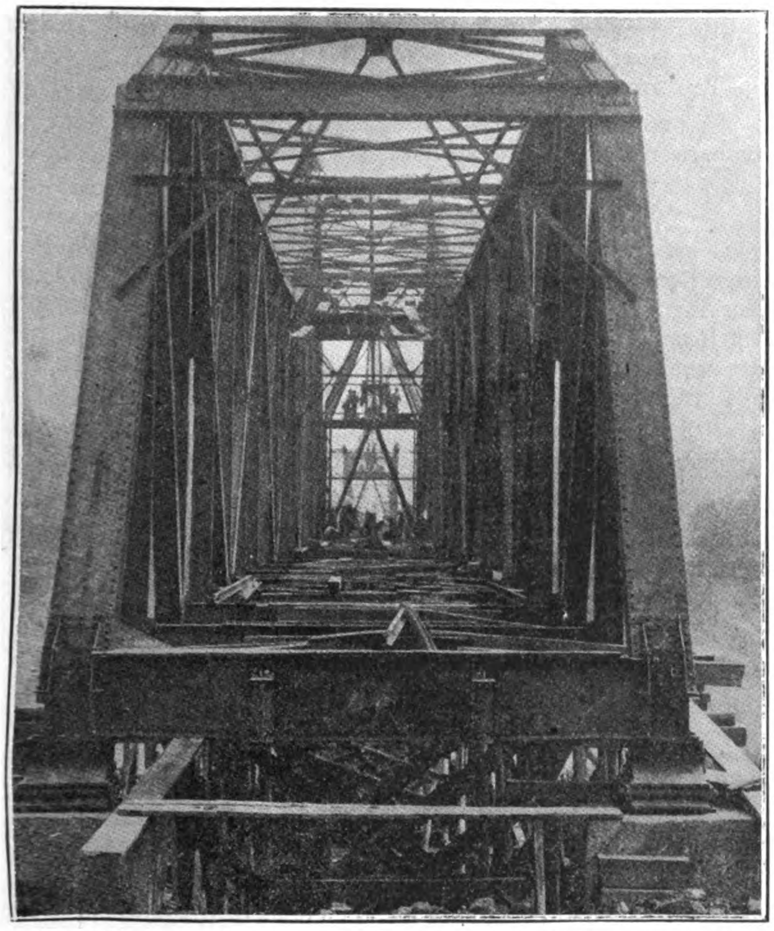
Bridge of 40 m. span at Km. 420.1 of the Northern Line under Construction

The Pass Tunnel at Km. 426 of the Northern Line under Construction



The Bridge over the Mehnam at Km. 366 of the Northern Line under Construction

		1919-1920		1918-1919
Total Train Kilometres ...	Kms.	3,244,023	Kms.	3,353,595
Traffic Receipt per day ...	Tcs.	28,104	Tcs.	25,354
Traffic Receipt per Km. of Open Line	,,	4,631	,,	4,178
Traffic Receipt per train-km.	,,	3.16	,,	2.76
Running cost per train-km.	,,	1.44	,,	1.49



The Bridge over the Mehnam at Km. 366 of the Northern Line under Construction. This bridge has a span of 80+100+80 metres

		1919-1920		1918-1919
Total number of Passengers		5,332,186		4,646,290
Total Goods carried... ...	Tons	586,179	Tons	606,759
Head of Live-stock carried ...	Head	185,856	Head	207,216
Number of Passengers per train kilometre		1.64		1.39
Average fare paid	Tcs.	1.14	Tcs.	1.12
Average distance travelled ...	Kms.	46.26	Kms.	48.23
Tons of Goods per train-km.	Tons	0.18	Tons	0.18

Financial and Traffic Report

(a) *Standard Gauge.*—Total length of line opened to traffic at the end of the year was 950.5 kilometres.

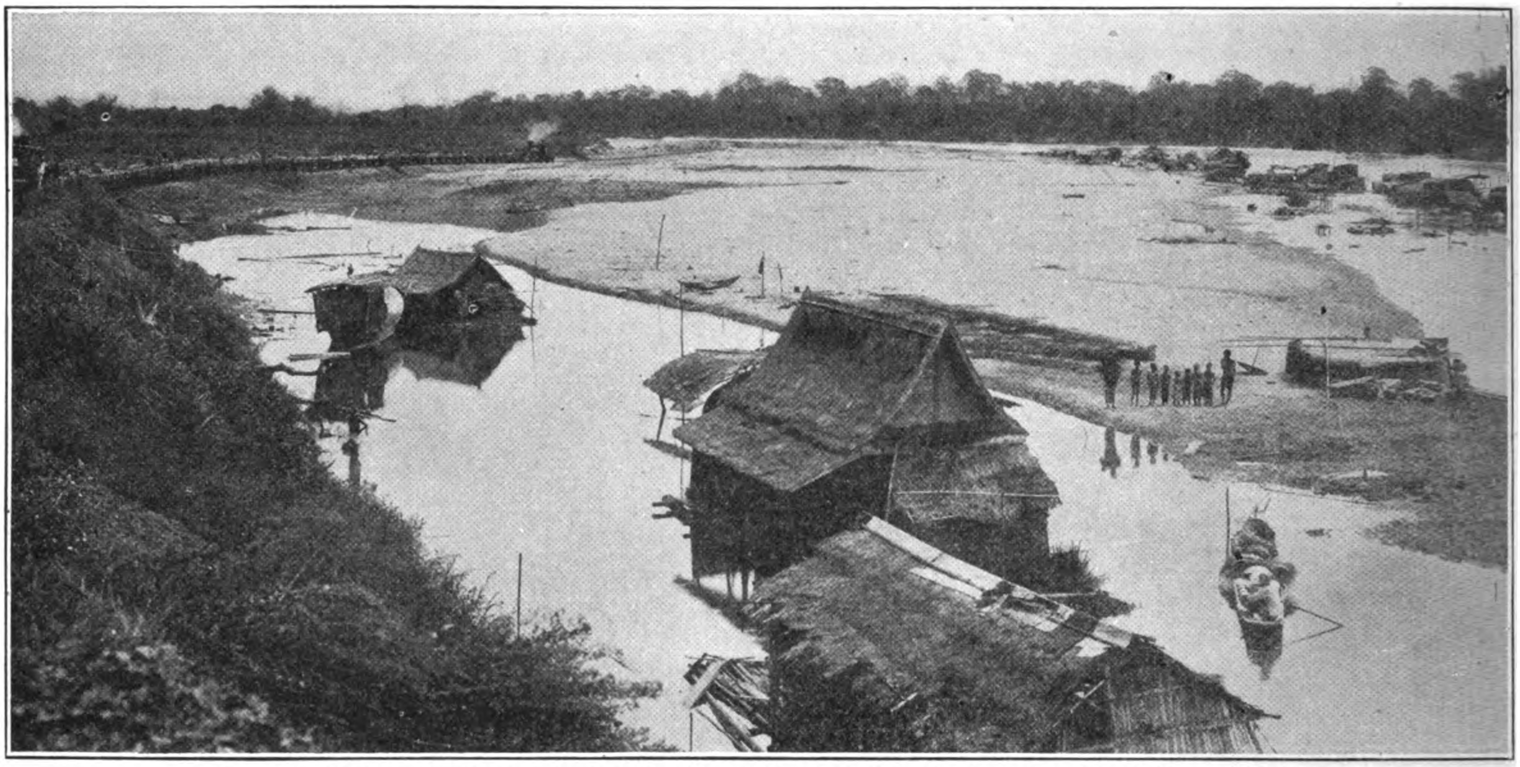
The capital account at the end of the year amounted to a total of Tcs. 60,334,444 distributed as follows:—

1. Korat Line, Bangkok—Korat ...	264.1 Kms.	Tcs.	17,673,189
2. Eastern Line, Bangkok—Petriew...	63.4 ,,	,,	3,424,333
3. Northern Line, Ban Phaji—Pang Yang	587.6 ,,	,,	34,466,181
4. Sawankaloke Line, Ban Dara Sawankaloke	28.9 ,,	,,	816,581
5. River Line, Makasan—River Station	6.5 ,,	,,	614,150
6. Extensions and Improvements ...		,,	3,291,885
7. Various Surveys		,,	48,125
		Total Tcs.	60,334,444

The capital account during the year was increased by Tcs. 162,345

The average cost per km. of all lines to date ... Tcs. 63,443

Financial Statements.—The gross earnings amounted to Tcs. 6,331,353 as against Tcs. 5,884,813 for the previous year. This represents an increase of Tcs. 446,550 and is principally due to the large number of passengers carried. The gross working expenses amounted to Tcs. 2,581,890 as against Tcs. 3,000,218 for the previous year. This decrease, amounting to the appreciable sum of Tcs. 418,326, is principally due to the reduction of expenditure on new works and the decrease in the cost of maintenance, the latter being much reduced from the large expenditure of the previous year.



Siding at the Mehnam for the Supply of Sand Ballast at Km. 340 of the Northern Line, Royal Siamese Railways

The net dividend earned after deducting contribution to renovation fund is 5.71 per cent. compared with 4.29 per cent. for the previous year.

Increase in Receipts	7.59%
Decrease in Working Expenses	13.94%
Percentage of Working Expenses to Gross Receipts	40.78%

WORKING RESULTS.—The working results for the year in comparison with the previous year are as follow :—

	1919-1920	1918-1919	Increase + Decrease—
	Ticals	*Ticals*	*Ticals*
Gross Receipts	6,331,353	5,884,803	+ 446,550
Working Expenses ...	2,581,890	3,000,218	— 418,328
Net Receipts	3,749,463	2,884,585	+ 864,878
Renovation Fund ...	301,672	300,860	+ 812
Net Profit	3,447,791	2,583,725	+ 864,066

(*b*) *Metre Gauge*.—Total of line opened to traffic at the end of the year was 1,264 kilometres.

The capital account at the end of the year amounted to a total of Tcs. 60,489,590 distributed as follows :—

1. Bangkok Noi to Petchaburi	151 Kms.	Tcs.	8,241,174
2. Petchaburi to Ootapao	776 ,,	,,	36,968,903
3. Branch Lines, Trang, Nakon Sritha-maraj and Singora	156 ,,	,,	6,924,294
4. Ootapao to Balaw	136 ,,	,,	5,440,000
5. Haad Yai to Padang Besar	45 ,,	,,	2,866,433
6. New Works executed in year 2,462 but included in Construction Account for 2,463		,,	48,786
		Total Tcs.	60,489,590

NOTE—Accounts 2 to 5 are not yet finally closed.

The Capital Account during the year was increased by Tcs. 3,642,656
The Average cost per Kilometre of all lines to date is Tcs. 47,856

FINANCIAL STATEMENT.—The gross earnings amounted to Tcs. 3,926,581 as against Tcs. 3,369,386 for the previous year, an increase of Tcs. 557,203. This increase is mainly due to the larger number of passengers carried to an extent of about 12.6 per cent. over the previous year.

The gross working expenses amounted to Tcs. 2,100,734 as against Tcs. 2,009,873 for the previous year, an increase of Tcs. 90,861. This increase is partly due to the augmentation in the value of materials used in the mechanical service for repairs of locomotives and wagons and also high price of fuel.

The net dividend earned after deducting contribution to renovation fund is 2.52 per cent. compared with 1.89 per cent. showing an increase of 0.63 per cent. over the previous year.

Increase in Receipts	16.54%
Increase in Working Expenditure	4.52%
Percentage of Working Expenses to Gross Receipts	53.50%

WORKING RESULTS.—The working results for the year in comparison with the previous year are as follow :—

	1919-1920	1918-1919	Increase + Decrease —
	Ticals	*Ticals*	*Ticals*
Gross Receipts	3,926,589	3,369,386	+ 557,203
Working Expenses ...	2,100,734	2,009,873	+ 90,861
Net Receipts	1,825,855	1,359,513	+ 466,342
Renovation Fund ...	302,448	284,235	+ 18,213
Net Profit	1,523,407	1,075,278	+ 448,129

Engineering Service, Maintenance of Ways and Works

(*a*) *Standard Gauge* : PERMANENT WAY.—Considerable work has been carried out in re-sleepering and maintaining the permanent way, and the following materials have been used :—

Ballast	25,439	cbm.
Pitching stone	12,903	,,
Sleepers	94,225	pieces
Rails	271	,,
Fishplates	1,014	,,
Fishbolts	2,351	,,
Bearing plates	574	,,
Spikes	41,353	,,
Telegraph posts	510	,,
Insulators	2,176	,,

EARTHWORKS.—The earthworks executed for making up embankments and training of rivers amount to 103,837 cbm.

BRIDGES.—All the timber bridges were kept in good repair :

148 corbels, 458 girders, 100 caps and 20 posts having been renewed. A new bridge is being built to replace the old timber one at Km. 205.7 on the northern line. Twenty steel bridges were painted during the year. The river protection work at Ban Dara bridge is practically completed.

STATIONS AND OTHER WORKS.—The station and other buildings have been kept in good repair. A new station building has been erected at Ban Hua Wai, also several minor quarters for subordinate officials. A new eating house has been erected for the workshop men at Makasan. The new station at Klong Plakot was completed also the extension of Koke Kathiem Station. Several siding were extended to cope with the increased traffic. One new semaphore was erected at Ban Mee.

(b) *Metre Gauge :* PERMANENT WAY.—The permanent way has been maintained in good order and the following material used in renewals :

Ballast	37,200	cbm.
Pitching stone	3,321	,,
Sleepers	45,835	pieces
Rails	351	,,
Fish plates	352	,,
Fish bolts	1,586	,,
Spikes	22,620	,,
Telegraph poles	1,548	,,
Insulators	2,541	,,

The earthwork in repairs to embankments amounted to 57,178 cbm. Several new sidings have been put in.

BRIDGES.—Renewals to timber bridges consisted of 61 sills, 783 posts, 296 caps, 608 corbels and 1,340 girders, making a total of 3,033 pieces. A total of 21 new bridges and 19 small openings have been constructed. 17 steel bridges were painted during the year.

STATIONS AND OTHER WORKS.—Stations and all buildings have been kept in repair and re-painted where necessary. Many new buildings required for traffic extension have been constructed including 5 stations, 12 quarters for officials, 4 rest houses, extension of goods sheds, one new wharf and landing place at Tah Samet, and enlargement of wharf at Kan Tang, etc.

Construction

(a) *Standard Gauge—Northern Line :* DEN JAYA—NAKON LAMPANG DIVISION, 109 KMS.—The work of completing this portion of the line has been steadily proceeded with and is now, with the exception of a few rock cuts not yet taken out to their full width, practically completed.

EARTHWORKS.—The quantity of earthwork executed during the year amount to 97,893 cbm. which added to that of the previous year makes a total of 171,736 cbm.

BRIDGES AND OPENINGS.—Extensive protection works have been carried out to prevent scouring at the outlet of openings and at the toe of embankments alongside of rivers, necessitating the use of 6,540 cbm. of pitching stone.

New openings have been constructed as follow :—

Open	culverts	2	m.	1
Parabolic	,,	2	,,	1
Pipe	,,	0.60	,, diam.	4
do.	,,	0.30	,, ,,	1

BALLAST.—The completing of the ballasting to the full profile has been continued with, 12.380 cbm. have been run out and spread which added to the previous years' supply makes a total of 14,970 cbm.

PERMANENT WAY.—A new firewood siding has been laid at Km. 523.

EXPENDITURE.—The total expenditure since the re-opening of construction amounts to Tcs. 277,440.

NAKON LAMPANG—CHIENGMAI DIVISION, 114 KMS.—No further portion of this line has been opened to traffic owing to the non-arrival of two steel viaducts from Europe.

SURVEY AND CLEARING.—These works are completed throughout.

ACQUISITION OF LAND.—Expropriation plans are prepared for the whole of the division and the work of purchasing the land required is in hand.

EARTHWORKS.—All earthworks, with the exception of the Chiengmai station yard and some minor works along the line, such as filling behind bridge abutments, platforms, etc., are completed. The total quantity executed to date amounting to 2,260,424 cbm.

BRIDGES AND OPENINGS.—The steel work for the bridge over the Meh Wang, the non-arrival of which so long delayed the completion of the work, has now been received and the erection of same is nearly completed. The steel work for the viaduct at Km. 589.1 has arrived but we are still awaiting that for the viaducts at Km. 590.3 and Km. 590.7. With the above exceptions all bridge work is completed to the Tah Chumpoo river at Km. 603. This river is being crossed by a ferro concrete bridge of 2 spans of 40 m. each, the foundations for which are in hand and preparations made for erection of the false work. From Km. 603 onwards the bridge work is in hand as far as possible.

PERMANENT WAY.—Platelaying, delayed for some time owing to the non-arrival of rails from America, was resumed on the 15th November, 1919 by the railway battalion of royal engineers and has now reached Km. 651.842, or 14 kms. from Chiengmai.

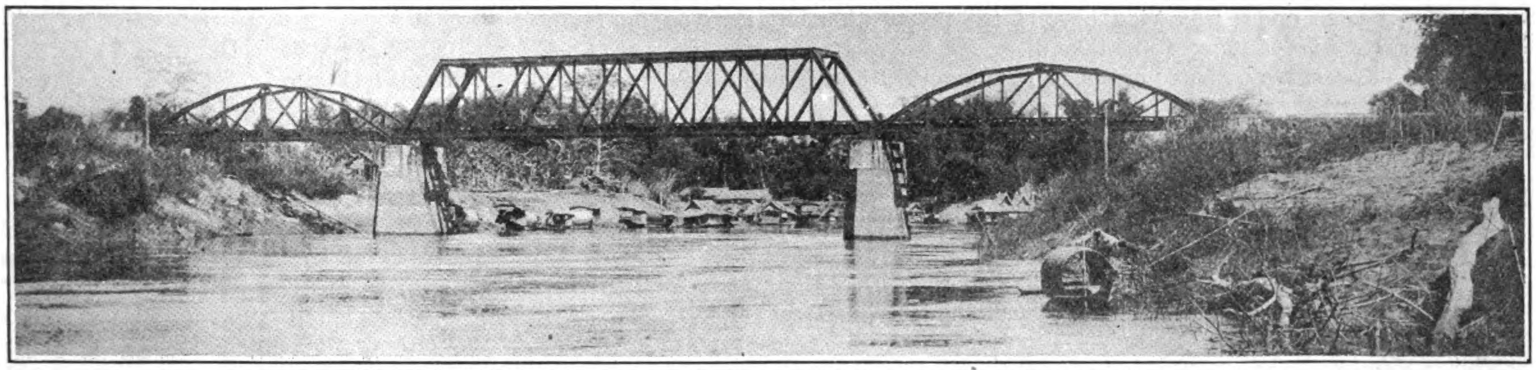
BALLAST.—Ballast run out and spread during the year amounts to 20,664 cbm. making a total to date of 23,687 cbm.

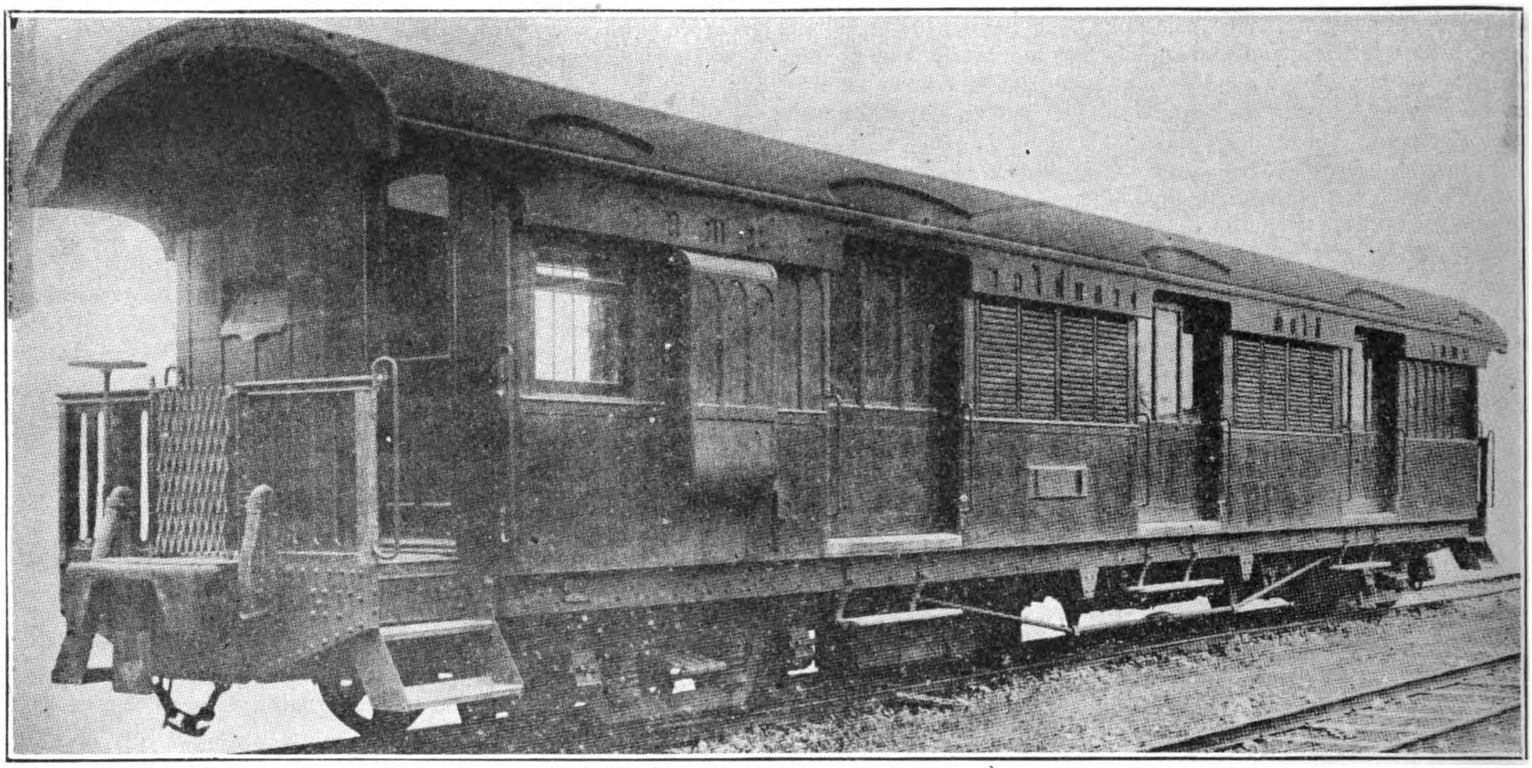
SLEEPERS.—Sleepers to the number of 2,480 and 8 sets of switch sleepers have been purchased during the year which completes the supply required to reach Chiengmai.

TELEGRAPH LINE.—Beyond the purchasing of material required no further extension of the telegraph line north of Pang Yang Km. 587.6 has been carried out. The work will be continued in the near future.

BUILDINGS.—The only building erected during the year has been the maintenance engineer's office at Nakon Lampang.

EXPENDITURE.—The total expenditure to date amounts to Tcs. 7,749,938.


Bridge of 25+40+25 Metres Span over the Ouaeo Noi River at Km. 314 of the Northern Line



Bogie Van, Siamese State Railways

EASTERN LINE EXTENSION (1 M. GAUGE): PETRIEW-ARANYA PRADESA. LENGTH ABOUT 196 KMS.—ACQUISITION OF LAND.—No work has been done under this head beyond the preparation of plans and particulars of holdings to be taken.

SURVEY.—The survey was commenced in June 1919 and by the end of the current year a trial line over the whole route was completed, as well as 40 kms. of line finally pegged out.

CLEARING.—A total length of 30 kms. have been cleared ready for earthworks.

EARTHWORKS.—A contract was let for 30 kms. of earthwork in January 1920. The work was promptly started and by the end of the year 4 kms. or approximately 38,500 cbm. were completed.

EXPENDITURE.—The expenditure to date amounts to Tcs. 72,006.

NORTH-EASTERN LINE EXTENSION (1 M. GAUGE): NAKON RAJASEMA—UBON. LENGTH ABOUT 310 KMS.—ACQUISITION OF LAND.—Plans and particulars are prepared for the first 20 kms. and a few transactions have been completed.

SURVEY.—The survey was commenced in January 1920 and up to date 20 kms. have been finally pegged out as well as some 35 kms. of trial lines.

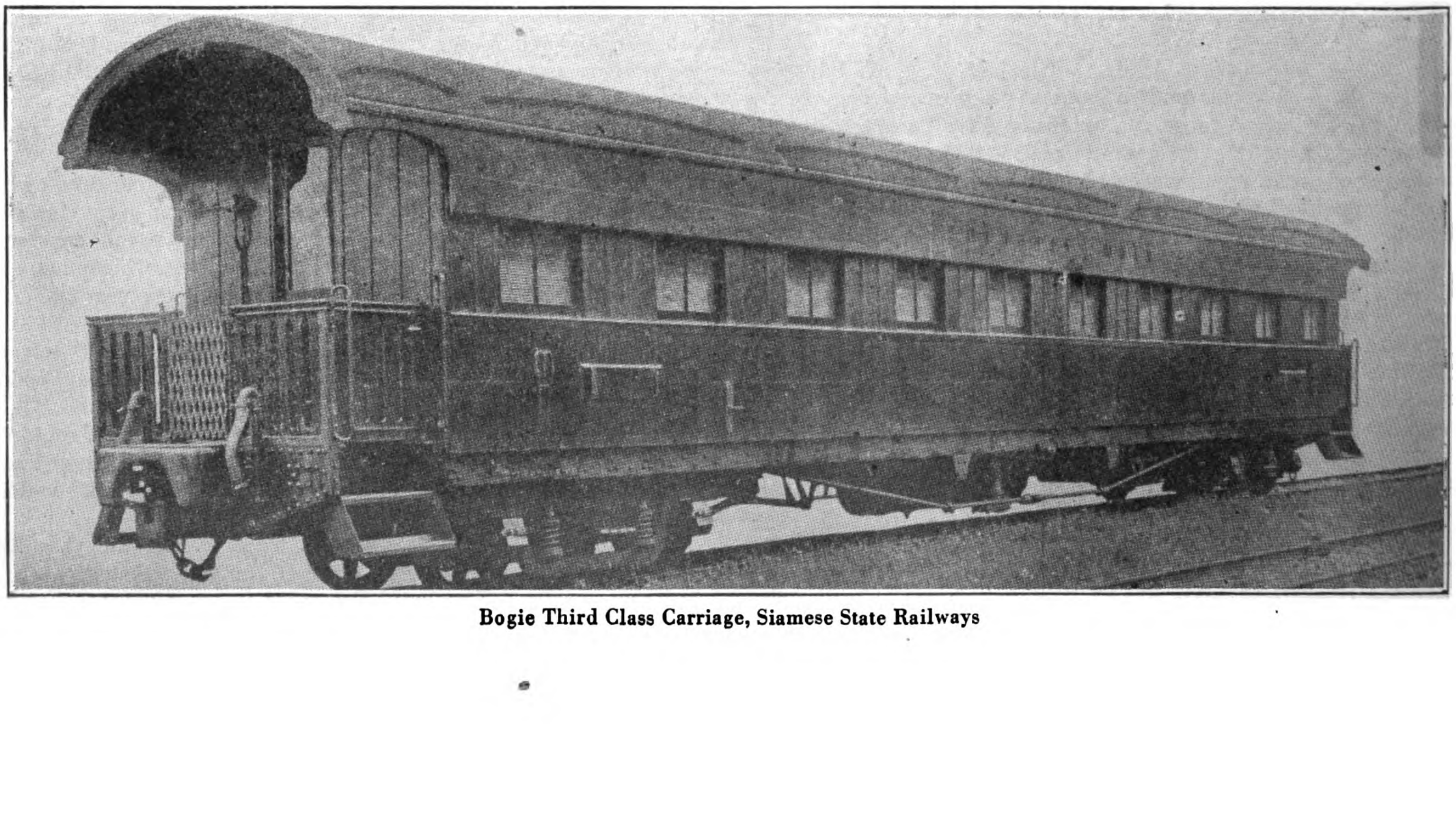
CLEARING.—Clearing is completed for a length of 4 kms.

EARTHWORKS.—A contract has been let for 20 kms. of earthwork, of this 2 kms. or approximately 14,500 cbm. have been completed.

EXPENDITURE.—The expenditure to date amounts to Tcs. 15,968.

(*b*) *Metre Gauge—Southern Line:* PETCHABURI-OOTAPAO, 776 kms.—With the exception of additional quarters required from time to time or other works for dealing with the extensions of the traffic, this district is completed. A sum of Tcs. 3,346,609 has been expended during the year, made up as follows :—

Locos and rolling stock	Tcs.	2,627,126
Administration Building	„	135,106
Workshop machinery, stores, etc.... ...	„	393,388
New Stations, sidings, bridges and quarters	„	190,989



Bogie Third Class Carriage, Siamese State Railways

The total expenditure amounts to Tcs. 36,968,903 and is included in Statement A.

OOTAPAO-SUNGEI GOLOK, 219 KMS. SURVEY AND ACQUISITION. The survey, acquisition of land and clearing have been practically all finished.

EARTHWORKS.—The earthworks, with the exception of a few station grounds, and sundry small work is completed. A quantity of 436,480 cbm. has been executed during the year, making a total quantity to date of 4,812,518 cbm.

BRIDGES AND OPENINGS.—All culverts and small openings are completed or in hand with the exception of 19 yet to be started. All abutments and piers for steel bridges are completed or in hand, and awaiting the steel work. This commenced to arrive at the end of the year and it is expected that regular delivery will now take place and the work of erection, already started, will go steadily onwards. Timber bridges are completed throughout.

PERMANENT WAY.—The laying of permanent way is completed to the Golok river. Ballasting is in hand and is being pushed as fast as the supply of stone permits. Considerable difficulty was experienced in obtaining sleepers for this district and most of them have had to be brought from the Tung Song and Chumpon districts. Total quantity of sleepers purchased was 318,115. Total quantity of ballast paid for was 173,056 cbm.

TELEGRAPH LINE.—The telegraph line is under construction.

STATIONS.—All station buildings with two exceptions are completed, total number being 22. Office quarters and other buildings nearly completed throughout.

GENERAL.—No further section of this district was opened to regular traffic during the year, traffic trains run to Klong Sai where they pick up passengers and light goods brought by construction trains from the south. Total length of line open to traffic was 98 kms. The total expenditure to the end of the year amounted to Tcs. 9,945,103 and is included in Statement A.

HAAD YAI-PADANG BESAR, 45 KMS.—This section is opened to traffic and is completed with the exception of some steel work for bridges. This material arrived at the end of the year and the erection is in hand. Several official quarters and some other minor works have been executed during the year. The total expenditure to end of the year amounts to Tcs. 2,866,432 and is included in Statement A.

BRANCH LINES.—A sum of Tcs. 22,585 has been spent on these lines during the year principally on bridge openings. Making a total amount to date of Tcs. 6,924,293 as shown in Statement B.

BANGKOK NOI TERMINUS.—A sum of Tcs. 16,838 has been spent on this work during the year principally on expropriation and roads. Total expenditure to date Tcs. 411,956.

Mechanical Service

(a) *Running Service:* LOCOMOTIVES.—During the period under review no new locomotives were added to the stock which remained the same as at the end of the previous year, namely: 62 standard gauge and 37 metre gauge locomotives. Of the 25 4-6-0 locomotives on order with the North British Locomotive Co., Ltd. of Glasgow for the metre gauge lines 7 were delivered and in course of erection at the end of the year. The remaining 18 locomotives are expected to arrive in June, 1921. No further orders for locomotives have been placed during the year. The work of constructing the railway to the north and to the south continued to absorb a considerable number of the locomotives, but these engines are of little or no value for work on the open line. The two locomotives on hire from the Federated Malay states railways for construction work were returned during the year. Considerable difficulties were experienced on all lines especially on the southern line due to the increasing traffic and shortage of engines and spare parts but traffic was carried on without reduction of train service.

Particulars of locomotives repaired including repairs to locomotives employed on construction and maintenance service are as follow:

Particulars	Heavy	Medium	Light	Total Repaired 1919-20	1918-19
Standard Gauge Engines	14	3	11	28	19
Metre Gauge Engines ...	11	8	2	21	17
Total ...	25	11	13	49	36

PASSENGER STOCK.—The following passenger stock for the southern line was on order at the beginning of the year with The Metropolitan Carriage and Wagon and Finance Co., Ltd. of Birmingham, England :—8 bogie first and second-class carriages: 8 bogie vans: and 12 bogie third-class carriages. Delivery of these was commenced and 8 bogie third-class carriages were erected and handed over to traffic service at the end of the year. No further orders were placed for passenger stock during the year. The work on converting 5 standard gauge bogie third-class and van carriages to bogie vans was completed during the year.

The number of carriages repaired during the year was as follows :—

Particulars	Heavy	Medium	Light	Total Repaired 1919-20	1918-19
Standard Gauge Carriages	6	70	76	152	144
Metre Gauge Carriages ...	42	8	31	81	96
Total ...	48	98	107	233	240

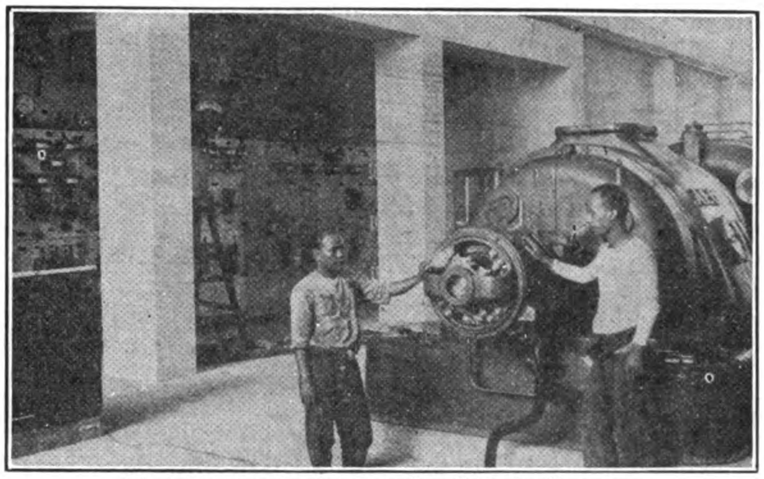
FREIGHT STOCK.—The following material was on order at the beginning of the year :—Underframes and steelwork for 200 metre gauge covered freight wagons for the southern line with the Metropolitan Carriage and Wagon and Finance Co., Ltd. Underframes and steelwork for 100 cattle wagons and 20 goods brakevans also for the southern line with The Midland Railway Carriage and Wagon Co., Ltd. of Birmingham, England.

The 200 covered goods wagons were delivered towards the end of the year and construction of the bodies is in good progress. Six metre gauge bogie rail trucks for the southern line on order with Messrs. Baume et Marpent, Belgium, prior to the outbreak of the war, but not delivered due to the German occupation of Belgium were delivered at the end of the year and are at present in course of erection, one of these was handed over to traffic service before March 31. There are also 200 metre gauge low-sided wagons on order with Messrs. Baume et Marpent. This was a pre-war order not completed and has now been renewed. The delivery of these is expected during the year B.E. 2463. The wagons are to be used for the construction of the eastern and north-eastern lines extensions. No further orders for freight stock were placed during the year. One standard gauge covered freight wagon was damaged beyond repairs during a derailment on the northern line and has been struck off the list of rolling stock. Twelve standard gauge timber trucks were converted to low-sided wagons during the year. Five metre gauge low-sided wagons were converted to cattle wagons during the year.

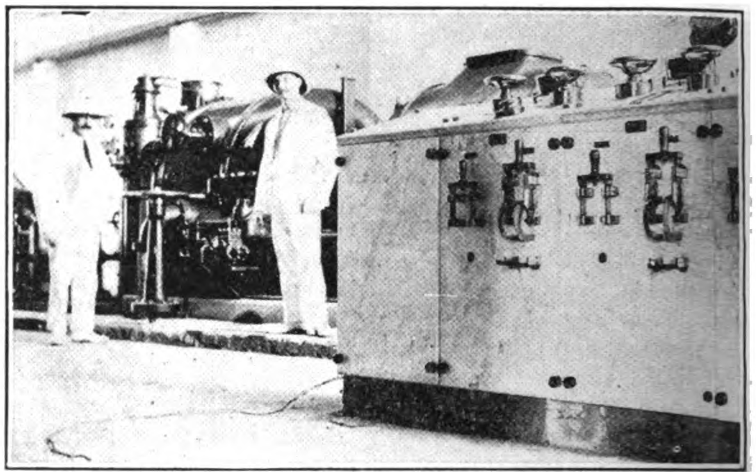
Workshops.—A considerable amount of modern workshop machinery was ordered and the new wood-working machinery was erected during the year. The new electric traverser outside the carriage and wagon shop at Makasan was completed and put into use at the beginning of the year. With the new organisation and additional supervision provided for and the new machinery purchased it is hoped that the output will increase accordingly. A scheme for extending and altering Makasan workshops to serve all lines is under consideration, now that the linking up of the state railway lines on the east and west banks of the Menam Chao Phya has been decided upon.

(c) *Transport Service*: MOTOR LORRIES.—The number of motor lorries in possession of the department remained the same as for 1918-1919.

LAUNCHES AND RIVER CRAFT.—One motor launch has been bought this year for use on the eastern line extension. The fleet of launches and other river craft at the close of the year was as follows :—3 steam launches, 5 motor launches, 1 house-boat, and 5 lighters.



High Tension Switch Board and Turbo-Generator



Exciter Bench Board and Turbine No. 3

Bangkok Municipal Electric Power Station

THE power station for the city of Bangkok is built entirely of brick and reinforced concrete and measures 121 by 135 feet. It is divided into compartments for furnace, boiler, turbines and switches, accumulators, etc.

Owing to the abundance and cheapness of paddy husk as compared with coal and wood, this by-product of rice milling is used as fuel for power houses in Bangkok wherever possible. In order to insure a minimum of manual labor in conveying the bulky paddy husk to the furnace, a system of conveyers was installed as a part of the plant of the power station, the principle being an electrically-driven Archimedian screw revolving in a steel casing. An 80-foot teak wharf was built to receive the paddy husk from the boats and to receive the lower end of the first conveyer, while the upper end is anchored to the end wall of the husk house.

The method adopted in feeding the boiler furnaces from the bunkers consists of a simple arrangement of mechanically controlled shutters, whereby the husk may be readily regulated as the demands for steam arise. The husk store is a building 164 feet long and 66 feet wide, constructed of concrete pillars and brick walls between. The capacity of this store is equivalent to one month's requirements of paddy husk, while the bunkers hold a quantity sufficient for two weeks' demands at full load.

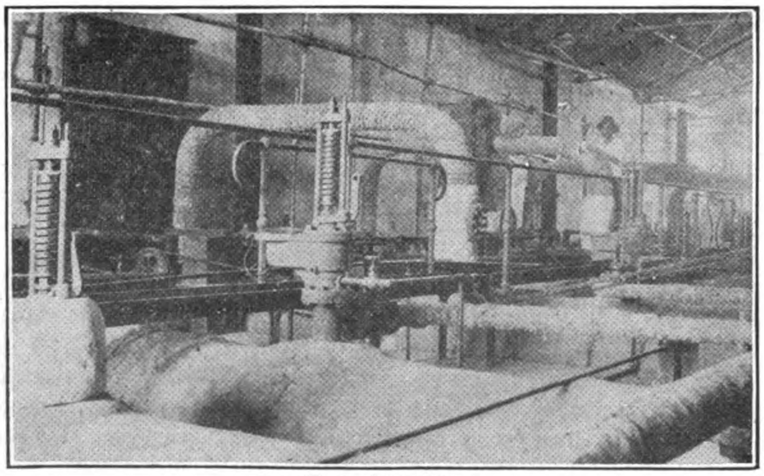
Babcock & Wilcox boilers have been installed. There are 16 steam drums, together comprising four batteries of boilers, each independent of the other. While paddy husk is the primary fuel, liquid fuel, coal, or firewood can also be used. Liquid fuel will also be stored overhead, but only for use in the event of paddy husk giving out.

Superheated steam will be used entirely for the steam turbines, the boiler pressure being 200 pounds to the square inch. They have been tested up to 400 pounds. The heating surface of each battery of boilers is 6,480 square feet, while the heating surface of the superheater is 1,980 square feet. One boiler will always be kept for liquid fuel. The chimney in connection with the boilers is of steel, and one of the highest in Bangkok, being 162 feet from ground level and 8 feet in diameter.

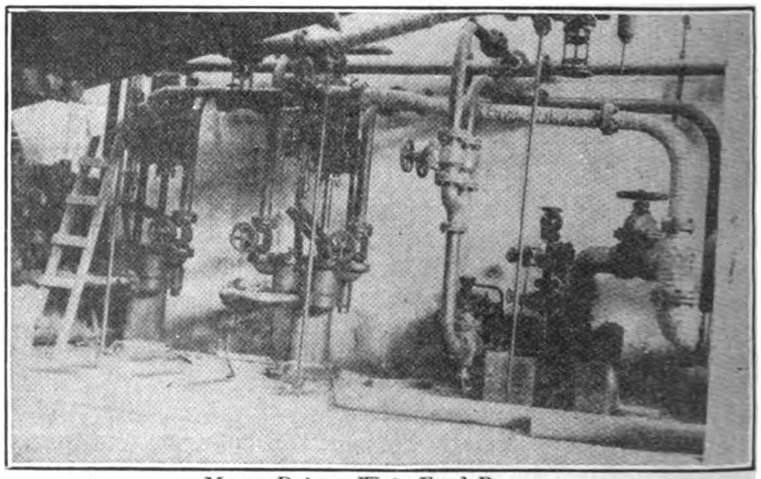
One object aimed at in designing the station was to have one bank of boilers, one turbine, and one condenser complete, so that if the station were divided into three sections each would work independently of the other. The parts of each section are interchangeable, thus rendering it necessary to keep only one set of spare parts.

There are three 1,000-kilowatt turbines of the multi-stage Curtis type. The plant includes the latest typə of boiler-feed pump driven by a small Curtis turbine and capable of delivering water against a boiler pressure of 300 pounds to the square inch. The condenser room, under the three turbines, is below the river level. The pumps here are driven by a small steam turbine.

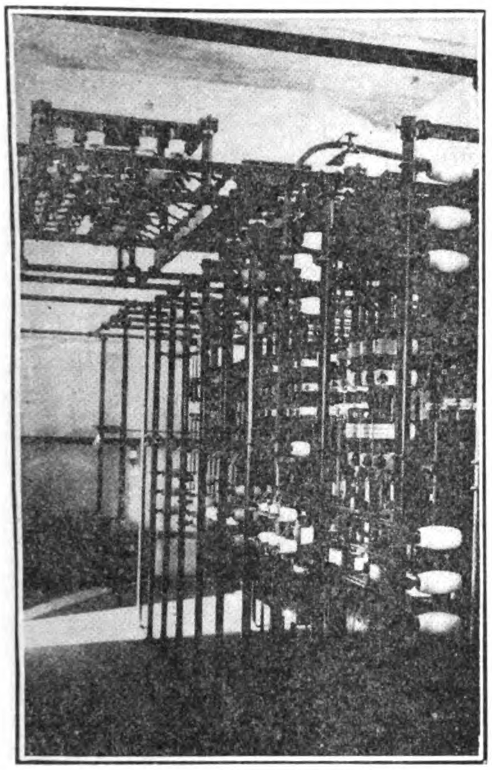
The switchboard is largely automatic in action, and includes an automatic device for regulating the voltage and keeping it steady. The high-tension gear (3,500 volts) is enclosed in a brick room at the back of the switchboard. All the switches which operate the current are of the latest oil-immersed pattern with remote control.



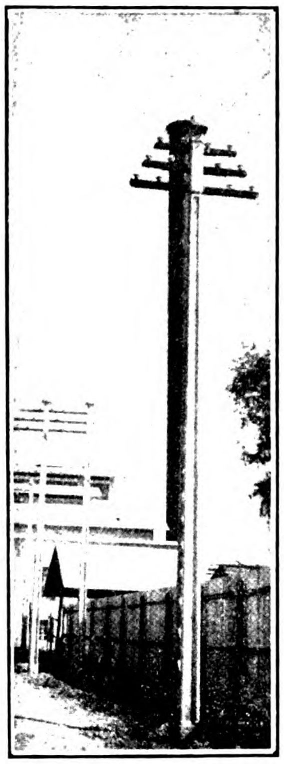
Top of Boilers



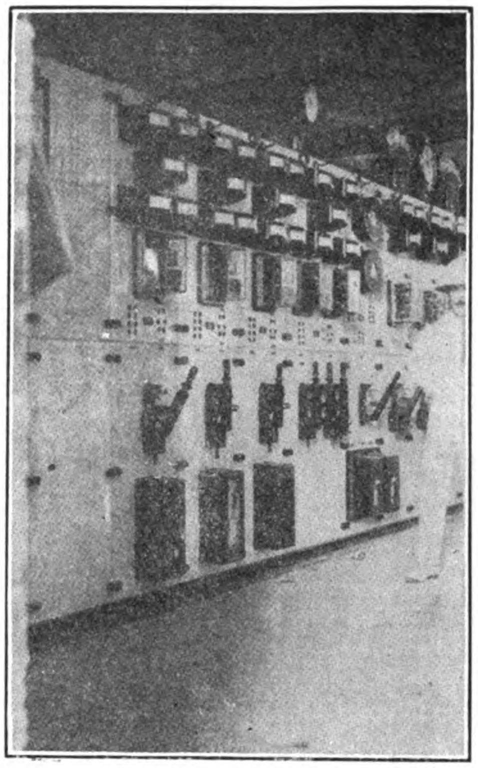
Motor Driven Weir Feed Pumps



Back of High Tension Switch Board



Pole Line leading from Station



High Tension Switch Board

Each of the three turbines and the motor generator is controlled by a separate panel in the switchboard.

A feature of the switchboard is the lightning resisters, which relieve the very high pressure caused by a flash of lightning striking the overhead wires and thus protect the generators from damage. Each generator has an instrument for registering the number of units, so that the output of the station may be calculated exactly, and also for indicating any leakage and on what part of the line. A large Tudor battery has been installed with a capacity of 2,600 amperes in 5 hours. There are 110 cells in the battery.

This station provides lighting for a large area occupied by royal palaces and residences for Siamese nobles. The motive power for operating the machinery of the Bangkok waterworks and the opium factory is also supplied by this plant.

New Dairen Colony for Building Contractors' Employees

A new colony is in process of construction at Tanchiatun at the west of the S.M.R. Co. General Laboratory, Fushimidai, Dairen. The first lot of houses having been finished, tenants began removing into them early in December, 1920. Out of altogether 368 houses to be erected, 174 two storeyed and 94 flat dwellings were completed. This colony, when founded, is to be automatic, though unofficially, and is to provide itself with sanitary, fire-extinguishing, and night patrolling arrangements. It may be mentioned that, out of the total capital of Y.2,000,000 of the Shotokukai, a society organized for the benefit of employees of the local building contractors, Y.1,500,000 has been laid out during the current year. Each tenant is entitled to the ownership of the dwelling he occupies in the course of ten years and is required to pay as monthly instalment the respective amounts of Y.68, Y.39, and Y.31 for a two-storeyed dwelling and flat dwellings of Class A and Class B. A hospital and an apprentice school are also under project. Everything possible will be done to make the colony a model one, especially in social welfare.

Chinese Get Philippine Timber Concession.—A timber concession of 60 square miles, located 200 miles south of Manila, has been granted to a group of Chinese capitalists who have formed the Philippine Lumber Company. The concession has a thirty years supply of tropical hardwood trees and is accessible by rail and water.

The company is controlled by Chinese capital and the managers are Chinese who have graduated from American and Philippine Colleges.

Mr. Paul N. S. Lee, associate superintendent, visited Shanghai for the purpose of establishing an agency for the company and to investigate the market conditions relative to the timber demands. He will probably also tender a bid for the immediate needs of the Tientsin-Pukow Railway.

The saw mill of the company is equipped with modern machinery and has a daily capacity for 60,000 to 80,000 board feet. There is a railway lighting power plant, an ice plant and motion picture theatre for the employees.

Chinese Probing Chinese Trade Conditions

For the purpose of ascertaining the real commercial conditions of the whole country, the general chamber of commerce, Peking, has established a commercial investigation department and in addition to the appointment of special delegates for proceeding to the various provincial capitals and big cities as investigators, the chamber has wired to the various chambers of commerce throughout the country as follows :—

(1) The general Chinese commercial situation towards domestic as well as foreign firms ; (2) the special products of the province and cities ; (3) the peculiar condition of every trade and how it can be developed ; (4) what is the condition of foreign commerce and how it affects Chinese ; (5) the latest condition of foreign and native commerce and what reforms can be introduced for the development of Chinese trade ; (6) the financial condition of the commerce, foreign and native and what weights and measures are in use locally.

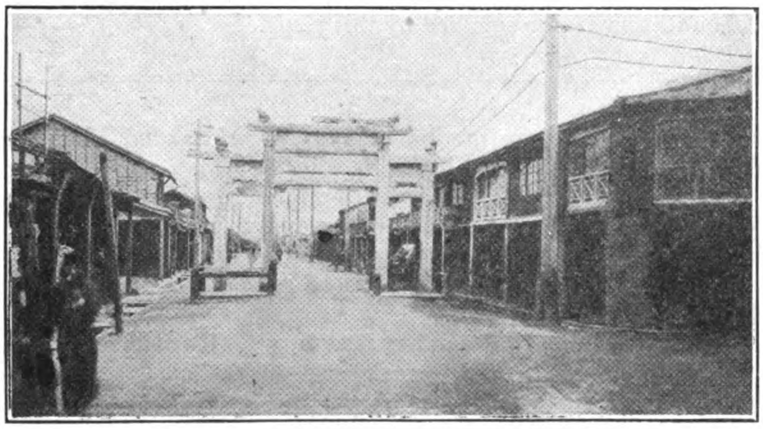
Public Works in Formosa

FORMOSA, up to the time of its occupation by Japan, was in a very backward state. The materials used for all buildings were clay, stones, bristle, etc., which besides not possessing lasting qualities, were hardly suitable to the erection of public buildings, and were an easy prey for the white ants, a pest that abounded in Formosa, but is absent from Japan. It is not easy to describe the inconvenience of communication and transportation. The construction of streets and bridges had been left in the hands of the inhabitants of the well-to-do class, the government only occasionally bearing a small part of this expenditure.

The market streets were narrow and muddy and gave forth a bad odor, which was a menace to the public health. The waters of the canals and streams were filthy and muddy, and as the climate of Formosa for the greater part of the year is tropical, the state of the canals was a source of plague and disease.

The rivers and streams of the island run down from the mountains in all directions, so that when heavy rains fell fields and plantations were flooded and a great deal of damage done. The Japanese took the matter up at once and an Irrigation Investigation Commission was appointed, and a sum of about Yen 100,000 set aside for its expenses. The question of irrigation is a very important one as there are large areas of land under cultivation. Many reservoirs have been and are still being constructed.

Typical Formosan Man and Woman



As it was and—

SE MENG TONG

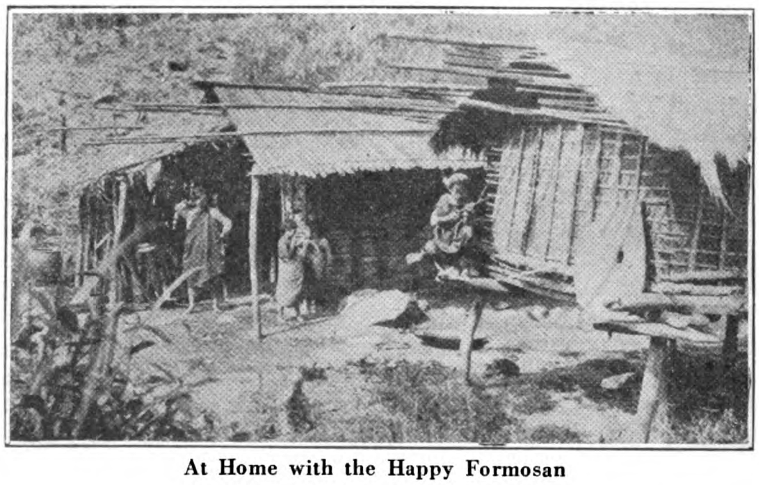
As it is

Buildings

The largest buildings on the island are the governor-general's court and the Taihoku hospital.

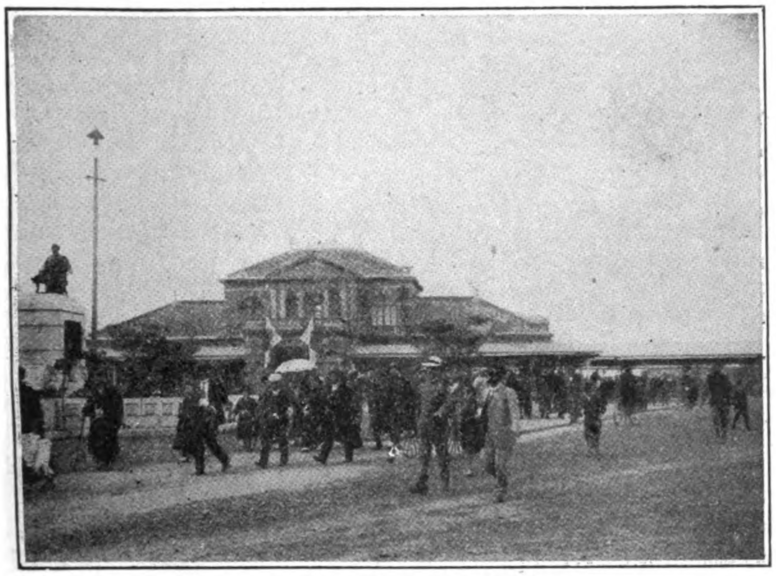
The old court was built when the island was under the control of the Manchu Dynasty. It had been in existence so long that most parts of it were decayed, the white ants having got a firm hold. It was necessary, therefore, to rebuild, and being the highest court in the island an imposing scheme of architecture and the cost of same had to be carefully considered, also the tropical climate had to be taken into account, and the fact that hurricanes frequently occur during the summer and autumn. Iron and cement combined were considered to be the best materials. Wood, though much cheaper, was not proof against the white ants unless a certain acid preventing decay was absorbed in it. The new court is an imposing structure five stories high. It is built of iron, cement, roof-tile and stones, and occupies an area of 75,600 sq. ft. (Japanese measure). A sum of Yen 2,500,000 was passed by the House to defray the cost of this building.

Taihoku Hospital.—The planning of a hospital requires great care at any time. Formosa is located in the tropical zone of Asia—the ground is very damp, and disease common, so that special attention had to be given to the building of the Taihoku hospital. Investigations of hospitals in Hongkong, the Philippines and other British settlements in South China, were made before the plans were drawn up. The building is two stories high and covers an area of about 222,768 sq. ft. (Japanese measure). The dormitory for patients covers an area of 58,320 sq. ft. The cost of this building was Yen 2,420,000.

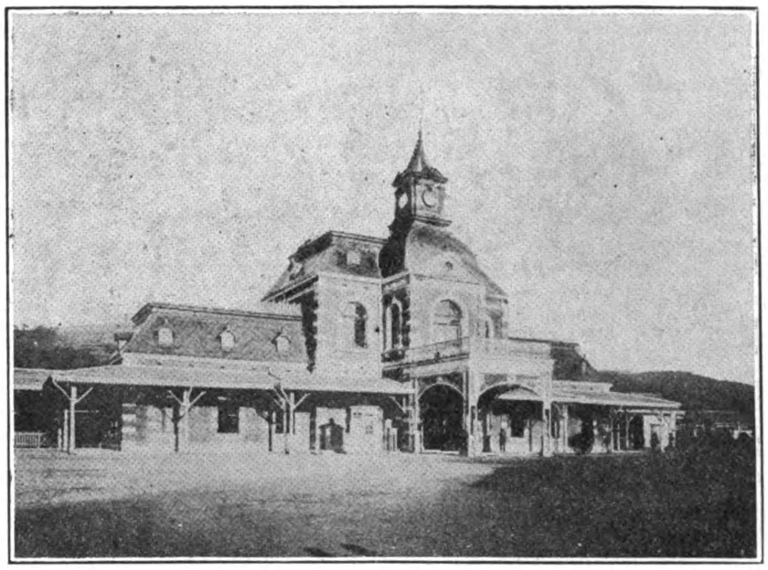


At Home with the Happy Formosan

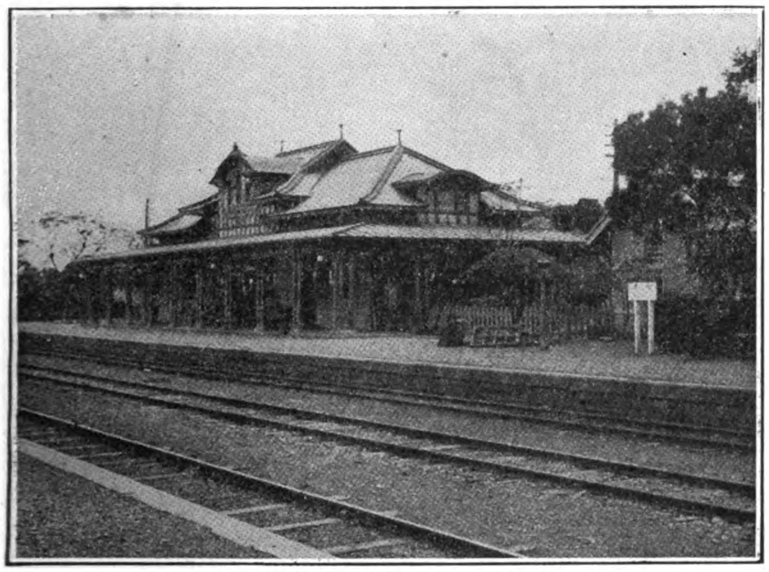
Types of Japanese Railway Stations in Formosa



The Railway Station of Taihoku

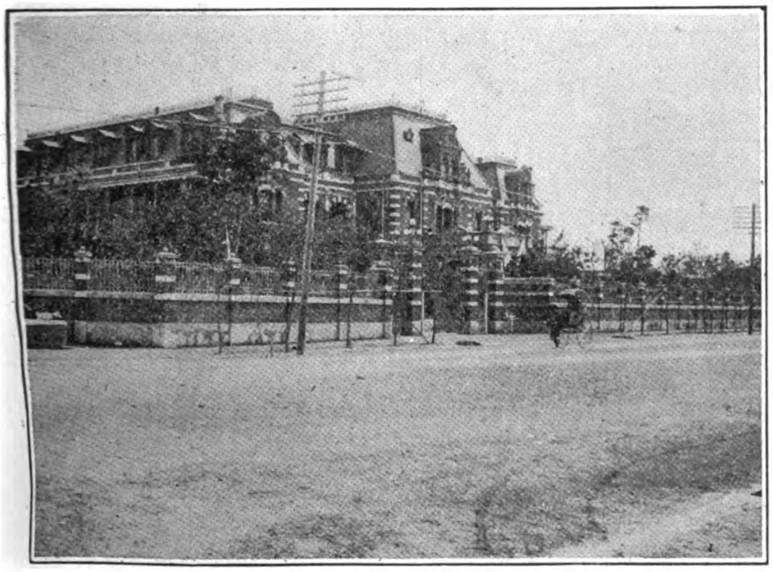


The Railway Station of Keelung

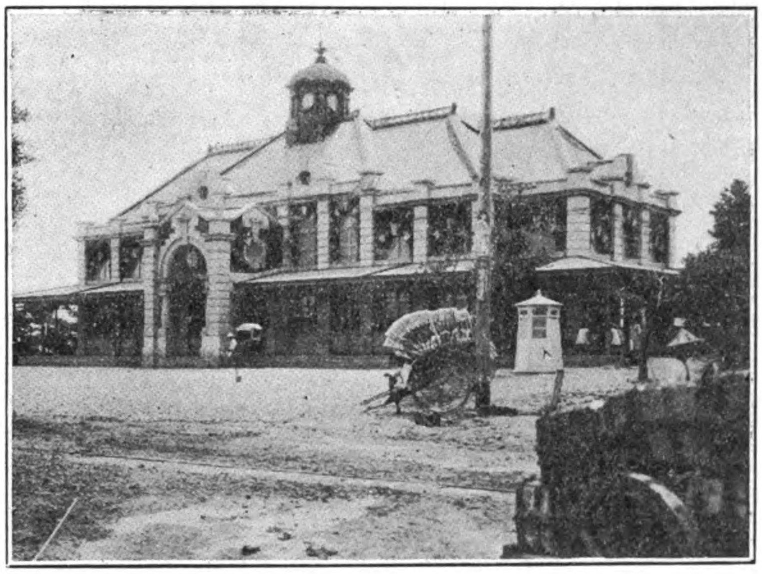


Toen Railway Station

Ako Railway Station

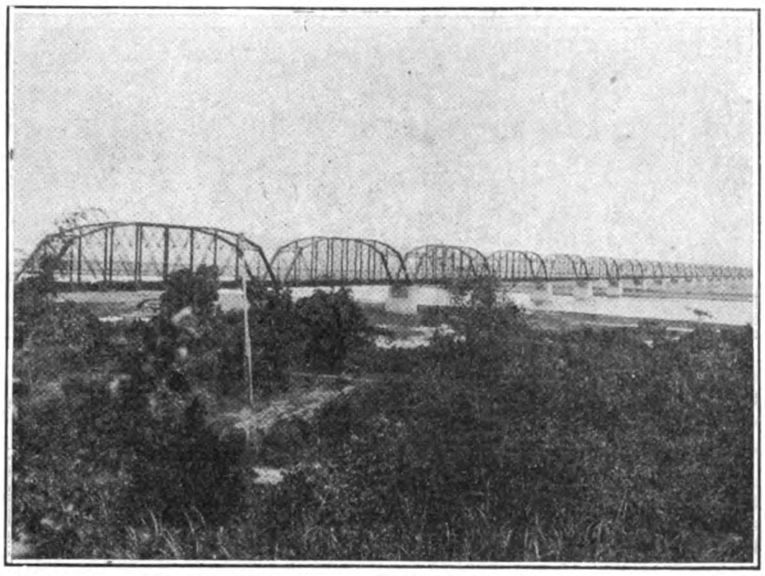


Keewei Railway Station

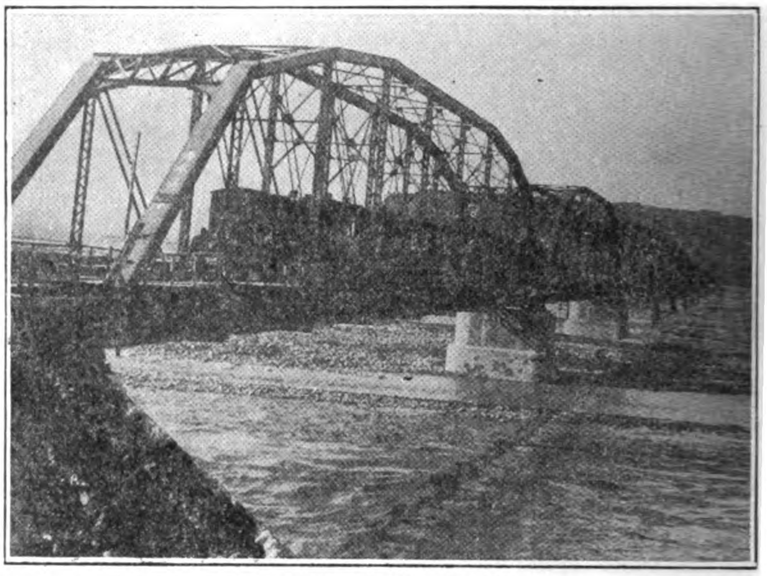


Mau Tsa Railway Station

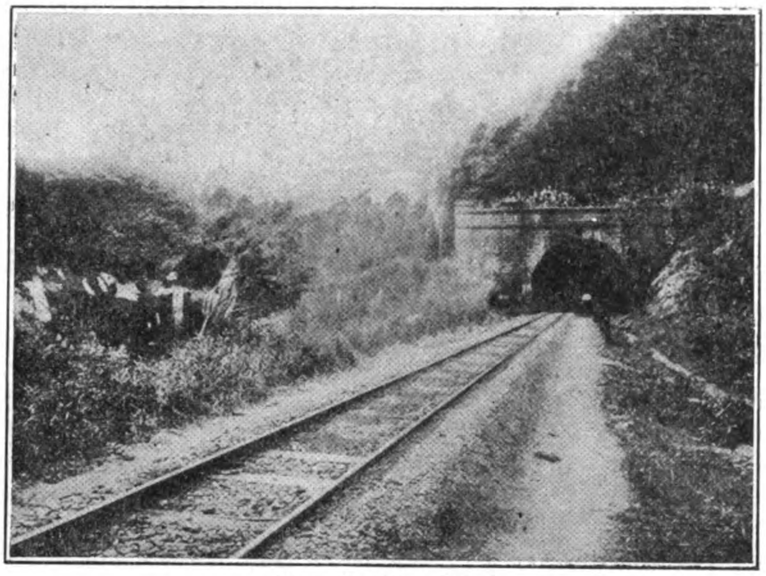
Bridge Works, Dykes and Embankments in Formosa



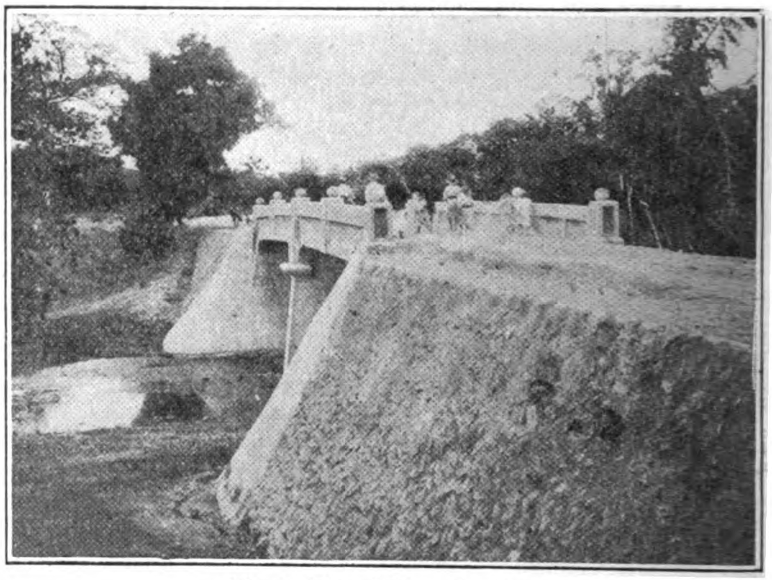
The longest railway bridge on lower Taisan Chi (fresh water), 5,700-ft. in length



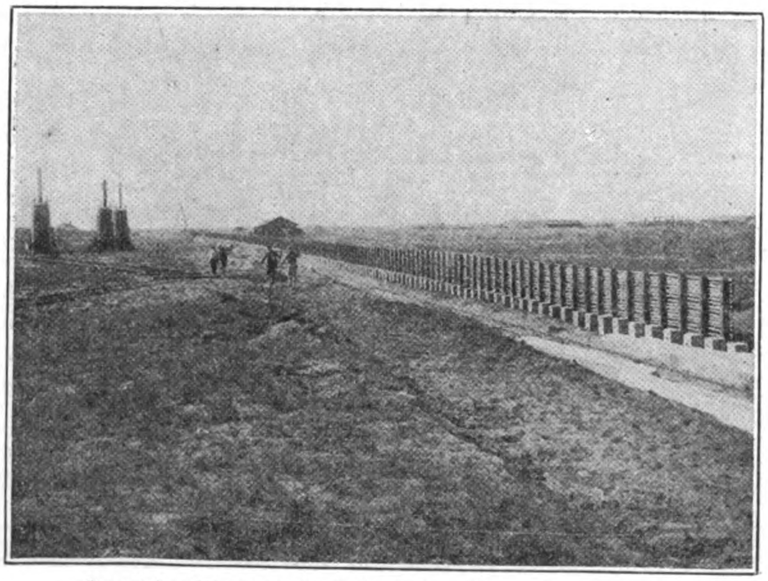
The Bridge of Zon-san Chi



Sung Tsz Liao Ditch

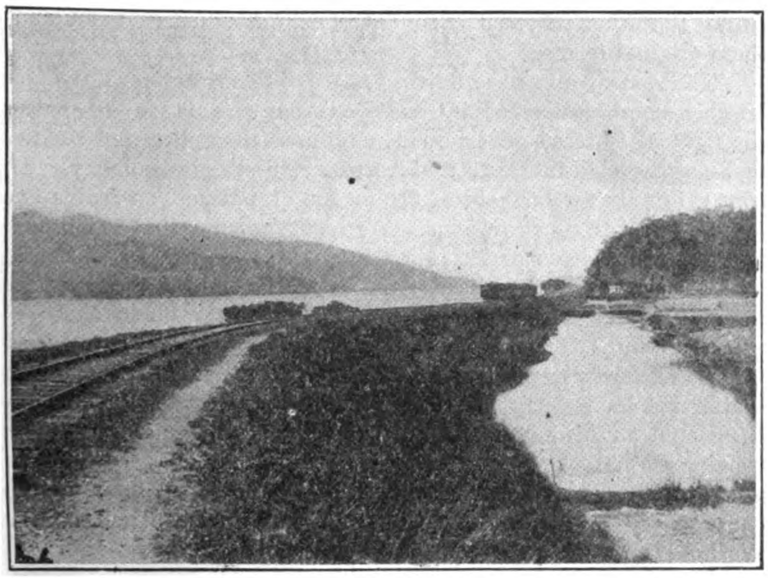


The Bridge of Nan Tsz Hang



Repairing Work of the Dykes along lower Tamsui River

Ta An Che Bridge



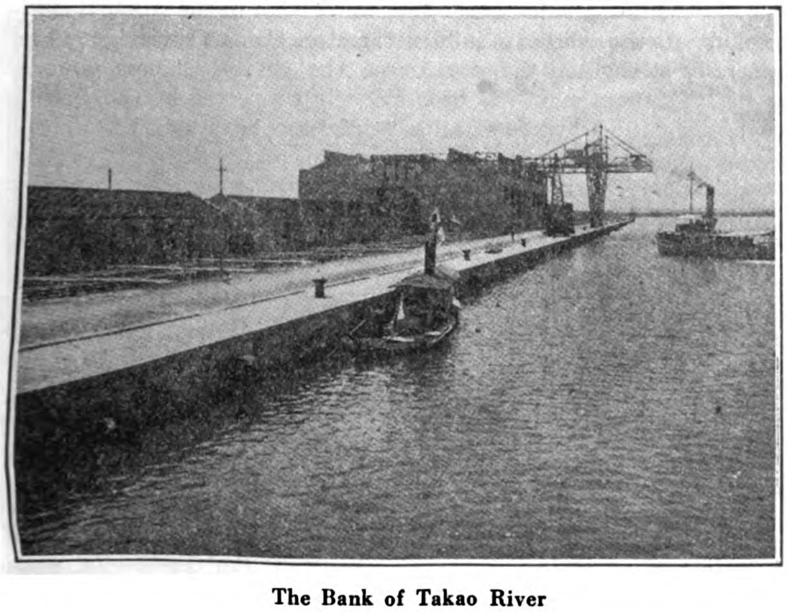
Along the Bank of Taisan

Ports

In the north there are the ports of Keelung and Tamsui, and in the south Takao and An Bink. All engineering works and constructions for Keelung and Takao have been completed according to the original plans. The navigable waters of Tamsui and An Bink are excavated every year so that launches and steamboats can pass to and fro. There are many ports on the eastern sea, but the coast line is straight, the streams violent, and in the event of heavy rain or storms, communication with the land is broken. No doubt earnest attention will be given to these ports in the near future.

Electric Light

The electric works of the island are divided into two classes—public and private. The public works—Taihoku and Takao—are under the control of the governor-general, and the private works of the sugar factory and gold mine, under the control of their own engineers. The latter is used solely for the purpose of giving power to the machines and the necessary lighting. There are other private works on the island but their scope is limited.



The Bank of Takao River

The Coal Industry in Japan

THE deposits of coal in Japan are estimated at 8,000,000,000 tons, and the output amounted to 31,000,000 tons in 1919, The following table shows the output according to district for some years past in, 000's of tons :—

	Kyushu.	Hokkaido.	Joban.	Yama-guchi	Other.	Total.
1910 ...	12,077	1,590	1,463	465	78	13,681
1913 ...	16,236	2,027	2,176	813	63	21,316
1916 ...	16,712	2,968	2,395	865	62	22,902
1919 ...	21,065	4,363	3,803	1,527	113	31,221

Kyushu takes up 70 per cent. of the national output and heads the list, but the increase in percentage of its output has been less than that in other districts of late, which may suggest that the Kyushu industry has already reached its zenith. Coal from the mainland of Japan is not so fine in quality, and moreover, deposits here are placed at only 1,200,000,000 tons, In the Hokkaido, the deposit is placed at 3,000,000,000 tons, which forms about 40 per cent. of the national estimated deposit and is nearly equal to that of Kyushu. As Hokkaido coal is good, it is likely that the centre of coal mining in Japan will be removed finally from Kyushu to Hokkaido. The deposit in Karafuto is estimated at 1,400,000,000 tons, in Formosa at 300,000,000 tons, and in Korea at 80,000,000 tons but mines in remote places are not yet worked there. The demand for coal has been greatly on the increase in Japan. The following table shows consumption for different purposes for some years past in, 000's of tons :—

	Bunkers.	Railways.	Salt Making.	Factories & Mines.	Total
1910	3,740	1,335	742	4,786	10,593
1913	4,727	1,786	798	7,614	14,924
1919	5,321	1,993	838	10,426	18,579
1920 (Est) ...	5,700	3,300	700	13,600	23,300

The demand has been on the decrease since the adverse turn of trade, but no over supply was seen at first, as the output was diminished at the same time. Latterly, the demand has further decreased, causing the price to decline. This has resulted in the closing of many mines and in a falling off as follows :—

	Output March.	Output Sept.	Proportion of Decrease. Per. Cent
Kyushu Coal...	1,650,000 tons	1,320,000	20.0
Hokkaido Coal	346,000	321,000	7.2
Honshu (Mainland) Coal	367,000	305,000	16.8
Total	2,363,000	1,946,000	17.6

Stocks have been rather on the increase, and the holdings in the ports of shipment for some months past may be mentioned as under in, 000's of tons :—

	Ports of Kuyshu.	Ports of Hokkaido	Total
March	782	263	1,045
April	831	283	1,114
May	877	276	1,153
June	1,008	280	1,288
July	1,079	312	1,391
August	1,101	322	1,424
September ...	1,116	319	1,435

In September, the stock held in Tokyo and Yokohama amounted to 214,000 tons, that of Ise Bay to 114,000 tons, and in Osaka and Kobe to 322,000 tons. The former two figures show a decrease and the last-mentioned an increase. At present first grade lump rules at Y.23 and first grade dust at Y.18. These are thought to be bottom prices.

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, MARCH, 1921.

The Covenant of the League:

"The High Contracting Parties, in order to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war, by the prescription of open, just, and honorable relations between nations, by the firm establishment of the understandings of international law as the actual rule of conduct among governments, and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organized peoples with one another, agree to this Covenant of the League of Nations."—The Preamble of the Covenant.

"The Members of the League undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League. In case of any such aggression or in case of any threat or danger of such aggression the Council shall advise upon the means by which this obligation shall be fulfilled."—Article Ten, styled by President Wilson "the heart of the Covenant."

A Square Deal for China

A Railway Program for the Consortium

"*A CONTRACT is a Contract.*"—This is the basic law of commercial morality. We cannot apply one principle in one part of the world and another in another part. In Paris at the Peace Conference, Great Britain and France insisted upon the inviolability of their contracts with Japan over Shantung. Quite recently, the American and British chambers of commerce in Shanghai invoked the same law, when Chinese merchants were caught in a falling market and endeavored to cancel their orders. Yes, a contract is, and must remain, a contract. Let us extend the application of the fundamental law to China, and see how it affects the consortium and its railway policy.

With the exception of the Siems-Carey and the preliminary Japanese railway agreements, all Chinese railway contracts now pooled in the new consortium were negotiated prior to August, 1914, on pre-war financial terms and conditions, that is to say, five per cent. interest on the loans, four per cent. commission to the bankers and a five per cent. commission on the purchase of materials. There are some variations from these basic terms, such as are found in the Pauling and the French contracts. Conditions have changed. It is now impossible to float the loans on the above terms. If unsupported by diplomatic pressure, the contracts are not worth the paper they are written upon. Many of these contracts were extracted from the Chinese government under severe diplomatic pressure, in some instances under ultimatums. The railway lines were designed by the various powers to delimit spheres of interest, or meet the urgent strategic requirements of the Asiatic military situation. Some were designed to divert the trade of China to ports outside the jurisdiction of the Chinese government, and so build up foreign interests at the expense of the nation which paid the bills. China had nothing whatever to say in the matter. The lines were selected, the terms dictated, and her representatives affixed their signatures on the dotted line. The pendulum has swung the other way. The contracts cannot be carried out under these original terms.

The consortium has absorbed these old contracts. The object of this combination of international bankers is to strengthen the Central Chinese government, eliminate the spheres of political and commercial interest, and restore China's sovereignty. The consortium is an offshoot of the league of nations, an instrument to give effect to its provisions. We must assume that it is honest and the high ideals underlying its organization are to be carried into effect. We must accept as a basic principle that all the political, strategical and special commercial interests in these old contracts and concessions have disappeared, and they can now be treated as purely business propositions. In other words, the spheres of interest have disappeared, and the powers concerned now view these contracts from the sole standpoint of developing and strengthening China. If this is true, then it should make no difference where railways are constructed in China, providing they develop the country and furnish a suitable security to the bondholders. We hold these principles to be self-evident.

The consortium agreement provides for pooling in a common pot all existing and future loan agreements guaranteed by the central and provincial governments of China. The only exception relates to existing agreements upon which it can be shown substantial progress has been made. Into the common pot the four groups have pooled: the Hukwang, Reorganization, Currency Reform, Industrial Development, Pukow-Sinyang, Nanking-Hunan, Jehol-Taonan, Tsinan-Shuntehfu, Kaomi-Hsuchow, Chinchow-Aigun, Siems-Carey, Grand Canal, Continental and Commercial Trust and the Pacific Development loans. The Belgian group was offered a one-ninth participation to include their holdings in the pool. The independent French group, headed by the Banque Industrielle de Chine, was excluded through the objections originally raised at the Paris meeting by the official French group. It is hoped, however, that a way will be found to bring this important institution into the consortium. The Pauling contract was not officially included in the pool, though it is understood that this firm is quite willing to join the combination. In other words, the official pool is at present limited to the holdings of the official groups, the independent French, British and Japanese institutions being still on the outside. In view of the fact that the most important agreements cover the financing and construction of railways, the main purpose of the consortium is to find some equitable basis for negotiating a new understanding to carry out their compromises. In effect, the policy of the consortium must be a railway policy. It will stand or fall on this issue.

The consortium agreement, provides amongst other things, that it shall remain in force for the period of five years, but a majority, or, three of the four powers concerned, can terminate the agreement at any time. The American government has emphasized in many public statements that the main object of the consortium is to eliminate the spheres of influence, restore China's sovereignty and generally strengthen the position of the central Chinese government. This sentiment has been strongly supported by the British government and by Sir Charles Addis, the head of the British group. Once the Japanese were convinced that their vital interests in Manchuria were not to be singled out for attack, they also cordially accepted these sound principles, and are now equally earnest in their desire to find a practical plan that will give effect to these worthy ends. In accepting the aims underlying the American invitation, the Japanese group has given its whole-hearted support to any plan deemed best by the American group, and loyally refrained from questioning or interfering with the policy laid down by Mr. Lamont. As a matter of fact, however, the Japanese entertain certain views as to how the consortium can be made a success, but are loath to express themselves for fear of being misinterpreted and accused of interfering with the American program.

Mr. Stevens, the representative of the American group, has arrived in China and given out several important statements concerning the object of the consortium and the conditions upon which loans will be made to China. But up to the present, no

statement has been forthcoming which would indicate that the consortium has any set policy or program for placing into execution its widely advertised plan to strengthen the central Chinese government by the restoration of its sovereignty. The consortium holds that the resumption of railway construction in China is of first importance, and is willing to enter into a new arrangement with the Chinese government, along certain lines, that will bring this about. It has very firm ideas as to how this should be done, and on the whole these are advantageous to China. But Mr. Stevens has not as yet opened negotiations for railway construction. In fact, there is every indication that a serious deadlock has been created, which may result in defeating the objects of the consortium. It would appear that Mr. Stevens is waiting for the Chinese to make the first advances, while the latter have openly stated that they will never ask the consortium for a loan, basing this objection to the fear that their administrative independence will be further impaired in terms for supervision over the expenditure of the loans. The situation is not reassuring. In effect, it may be assumed that the way of the consortium, although paved with the best intentions, is liable to lead to a prolonged stalemate, during which time events may well arise that may hasten its dissolution.

The situation is therefore fraught with great danger. Valuable time is being wasted. The higher interests of China and the Chinese people demand some practical solution to their transportation problems at the hands of the powers who have complicated the situation by restricting their sovereign rights in the construction of much needed railways. The highest interests of the powers collectively, and especially those of America and Japan, call loudly for an equitable and harmonious program that will permit them to work together and give effect to the sound ideals underlying the consortium. The time has arrived, therefore, to speak frankly and seriously, in order that a way may be indicated to bring about the full restoration of China's sovereignty over her transportations rights pooled through the medium of the consortium. I have discussed this phase of the problem with many Japanese officials and financiers, and without a dissenting voice they have signified their readiness to co-operate in any honest program that will bring peace and stability to their big neighbor and put an end forever to international competition in railway concessions, by restoring as far as possible, China's sovereignty in these matters.

In discussing these problems with the heads of the Japanese group, I discovered a willingness on their part to go even further than the Americans in giving practical expression to the consortium idea of restoring China's full authority over her transportation system. It was pointed out that unless some plan was devised to bring this about there was grave danger in the event of the consortium being abolished, of a return to the doctrine of the closed sphere. The situation from this angle is this. All the old railway agreements with their preferential conditions, together with all special rights and options that go to make up the doctrine of the closed sphere, have been pooled under the new consortium. The special rights formerly held by individual nations or their nationals are now internationalized under the consortium. As far as China is concerned there is no difference in the situation. The special rights of the individual powers have simply been transferred to an international holding company enjoying a monopoly of support from the interested governments. The danger in this situation arises from the possibility of a dissolution of the consortium as provided for in the agreement. If, by any chance, conditions arise which might necessitate the cancellation of the agreement, then the contracts, concessions, options and special rights now held in the common pool, would automatically revert to their original holders, and China would once more be divided into spheres of special interest, with America on the outside. It was clearly seen that under such conditions, American financiers seeking an outlet for their activities, would sooner or later precipitate a crisis in the interpretation of the "open door" doctrine. In view of the past tendency of Chinese officials working in close harmony with American firms (whose business in China has been built up on an anti-Japanese basis) to seek new issues by entering into contracts which conflict with rights held by Japan, the Japanese financiers are unanimous in their opinion that any plan that would forever eliminate this menace to the continuation of friendly relations and perpetuate the life of the consortium would receive their hearty approval.

Having made this point clear, the discussion naturally turned on how this much to be desired solution could be arrived at. I found that the best Japanese minds did not differ materially from the ideas of prominent Chinese officials on this subject, and all that was needed was an appeal to public opinion for a square deal to China to help point the way to a solution. If we accept the undoubted fact that the consortium is honest and sincerely desirous of restoring China's sovereignty and strengthening the central government, and that the construction of her railways can now be approached from a purely business viewpoint, then it is clear that it should make no difference to any of the powers where these railways are constructed. If we accept the fact that many of the pooled lines were originally political in character, and that their construction cannot be carried out under the terms and conditions of the contracts, then it is also clear that they should be cancelled or surrendered. On the other hand, China needs many thousands of miles of new railways to develop her resources for the benefit of the world and bring internal political stability to the nation. It is also clear that to do this successfully, China should be permitted to have her own national system of railways designed with a single view to her own requirements.

Instead, therefore, of pooling all these old political rights and options, with the danger to world peace involved in a dissolution of the consortium and a return to the closed door policy, it would seem that the solution lies in surrendering to the Chinese government these old rights, on the condition that an approved national system of railways be designed, and an equal mileage in this system exchanged for the surrendered lines. It is clear that once these old political rights and privileges are surrendered and the secret and other agreements between the powers delimiting spheres of railway activity in China cancelled, China's sovereignty is restored. The slate is wiped clean and the door opened to a new era for the consortium to function without a hitch in financing and supervising the construction and operation of the new national system designed for China's exclusive benefit. Under such conditions, the consortium can enter the field on a strictly business basis, and if, through any misfortune, it should be dissolved, the menace to world peace involved in a return to the closed sphere doctrine will have disappeared. This, in effect, was the plan approved by the members of the Chinese technical commission at Paris, as embodying as near as possible, the ideas of their government and people in treating with the consortium. That the scheme was not accepted by the consortium at the time is due largely to the fact that other matters were brought in to indicate how the lines could be constructed.

In discussing this phase of the problem with Japanese financiers, I gathered the impression that they were in hearty accord with any fair, honorable and practical solution, and should the other powers be willing to accept such a program, I have reason to believe that they will loyally contribute their part in making China's sovereignty an immediate and accomplished fact and carry their share of the financial burden to make it a success. It is therefore left to THE FAR EASTERN REVIEW to propose this solution to the existing deadlock between the Chinese government and the consortium. If, as Sir Charles Addis assures us (and this is self-evident), that the consortium policy must be a railway policy, then the question of administrative loans and advances for other purposes can be temporarily pigeon-holed and every effort concentrated on finding an amicable and honorable basis for negotiating terms and conditions for the construction of railways. It is needless to point out that any plan that will recognize and restore China's sovereignty must meet with the immediate and cordial endorsement of the Chinese people, irrespective of party, and the central government will be enabled to proceed with negotia-

tions with the assurance that the sentiment of the country is with it. It is also superfluous to add, that public opinion throughout the world, will support such a practical expression to the much advertised altruistic ideas which gave birth to the consortium.

The railway problem of China stands upon its own bottom. It bears no relation to administrative, reorganization or disbandment loans with their implied specific security and foreign supervision over the collection of revenues. The only possible measure of Chinese opposition that could disturb the harmony of negotiations would arise in determining control terms over the operation of the completed lines. Here the consortium is strengthened by its possession of the Siems-Carey contracts which provide for adequate foreign supervision over the traffic in addition to a twenty per cent. participation in the profits of the lines. There is little doubt that the Chinese people will bring strong pressure to bear upon their government to make any fair concession in the matter of traffic control and other adequate guarantees for the bondholders, in return for a cancellation or modification of this last provision, so the outlook for a successful termination to such negotiations is far from being pessimistic.

If such a plan meets with the approval of the Chinese people and reflects the opinion of its leading railway officials, and is not out of harmony with the ideas of Japan, then an analysis of the situation leads us to add that the American contractor (Siems-Carey Company) holding a contract for 1,100 miles of lines with an option on an additional 1,500 miles, would place no opposition to the scheme as this company is interested solely in building railways, and does not particularly care where they are built as long as they promise to become a safe investment for the bondholders. The same can be said of Pauling & Company, the British contractors who hold the right to construct the 1000 mile, Shasi-Singyfu line. The railway rights held by the official French group are confined to its participation in the Hukwang contract, and a forty-five per cent. interest in the Chinese Central Railways, Ltd, the official British institution for constructing railways north of the Yangtze River. There are no essential politics in their holdings at this time. The French group is emphatic in desiring an abolition of the sphere of interest doctrine, which has confined its activities to the unattractive possibility of building lines in Kwangsi and Yunnan. This brings us down to the contracts, options, etc., held by the other British official group, the British & Chinese Corporation, Limited. In view of the repeated declarations of Sir Charles Addis (the head of this group), of the necessity of replacing international competition with international co-operation, and his recent utterances about the railway policy of the consortium, it would seem that no serious objection could reasonably be raised to oppose the above plan of surrendering all the pooled railway rights and contracts to the Chinese government in exchange for an equal mileage or participation in a new system of national railways designed exclusively for the advancement of China's special interests.

The league of nations may survive in some form or other, despite the adverse verdict of the American people registered at the polls last November. Great Britain, France and Japan are heartily in favor of its provisions and seem intent upon preserving its usefulness under the original charter. This means that they unqualifiedly subscribe to its provisions which include the abrogation of all treaties that in any way infringe the sovereignty of the member states. Sooner or later, therefore, the time must arrive when all infringements upon China's sovereignty embraced within these secret and other understandings between the powers delimiting their respective spheres of railway activities in China, together with all similar agreements signed by China, will have to be cancelled. Now, Mr. Lamont, chairman of the consortium, recently stated in an address before the University Club in New York, that the Consortium was like a Far Eastern league of nations working in with New China to maintain the peace of the Far East and thus promoting the peace of the world.

Just so. If that is the case, then the first step of the consortium should be to live up to the ideals of the parent league and apply its principles to a member state without awaiting formal action to cancel these instruments which infringe upon China's sovereignty and circumscribe her liberty of action in constructing necessary railways. If the consortium is to become in fact a Far Eastern league of nations, China must enter the league on a basis of full equality. Once the assurance is given that China's sovereign rights are to be safeguarded and that her own national system of railways is to be made the basis of future consortium negotiations, a grateful people will get behind and support a strengthened central government in any equitable plan that may be negotiated for their financing.

Mr. Lamont voices the unanimous sentiment of the business element of the United States. It wants peace in the Pacific, and to this end it demands the elimination of all possible sources of friction with Japan. Peace in the Pacific and the maintenance of the "open door" in China will hinge largely upon the policy of the consortium. If it fails to function, and conditions in China revert once more to the closed sphere, with America on the outside insisting upon ignoring the rights acquired by others, the consequences will fall squarely upon the shoulders of those responsible for the birth and defeat of the consortium. The Japanese financiers, harmonizing with the ideas of the Chinese, have pointed one way towards permanent peace. We commend the solution to the very careful consideration of the other consortium powers.

G. B. R.

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The End of the Road

Which Way! President Harding?

WE realized at the Paris Conference, that if peace between Japan and America was to be maintained, Japan's story would have to be told. We also clearly recognized that only by a full, frank, and harmonious co-operation between the United States and Japan, through the consortium, could China be placed upon her feet and the spheres of influence eliminated. We determined to tell the story. It has been told. In this number of THE FAR EASTERN REVIEW we reprint from "Asia" the testimony of the late Willard Straight concerning his activities in Manchuria. It needs no comment. It tells us in straightforward language that the origin of American policy in that region is based upon the secret plans of the late Mr. Harriman to compel Japan to sell the South Manchuria Railway so it could be included in his world girdling transportation dream. There was no vital principle at stake, no legitimate American interest involved, only the cold, calculated determination of a railway manipulator to destroy the value of a competing line, in order to force acceptance of his terms. Mr. Straight's letters reveal that Mr. Harriman's business associates were maintained in complete ignorance of his plans, thus exonerating Kuhn, Loeb & Company and the American group, of being a party to this intrigue to compel Japan to forego the fruits of her victory over Russia. Mr. Straight and Mr. Harriman worked together and induced the state department to support them in order "to uphold the doctrine of the Open Door". Unfortunately for America, for Japan, and the peace of the Pacific, our state department made their operations the basis of its diplomacy in Manchuria, and at all times since has steadily insisted upon the recognition of our right to the Chinchow-Aigun railway contract. America was thus brought into the middle of the greatest problem that confronts the world in Asia.

Almost simultaneous with the publication of Mr. Straight's story, comes the revelations of Count Witte in "World's Work," corroborating the existence of the secret Russo-Chinese alliance directed against Japan. The disclosure of this alliance at Paris completely modified the entire Far Eastern question. Count Witte's evidence at this time completely supports THE FAR EASTERN REVIEW's presentation of the basic facts in the controversy, and together with the story of Mr. Willard Straight, sums

up the case for Japan in Manchuria and Mongolia. We have come to the end of the road. Their evidence will stand. The American people will refuse to get excited over an issue which had its inception in the brain of the most audacious railway and stock exchange manipulator our country has produced.

Japan's case is exceptionally strong. It has, perhaps, been somewhat weakened by the attitude of her military in Siberia, Chientao and elsewhere. Notwithstanding this, we believe that there is a meeting ground, where these issues which affect the peace of the Pacific, of the world, can be amicably adjusted to the satisfaction of all interested nations. There is only one way to do this, the manly and honorable way, the American way. Let us gather around the conference table and settle these questions amicably and with justice to all. *Which way do we turn, Mr. President ?*

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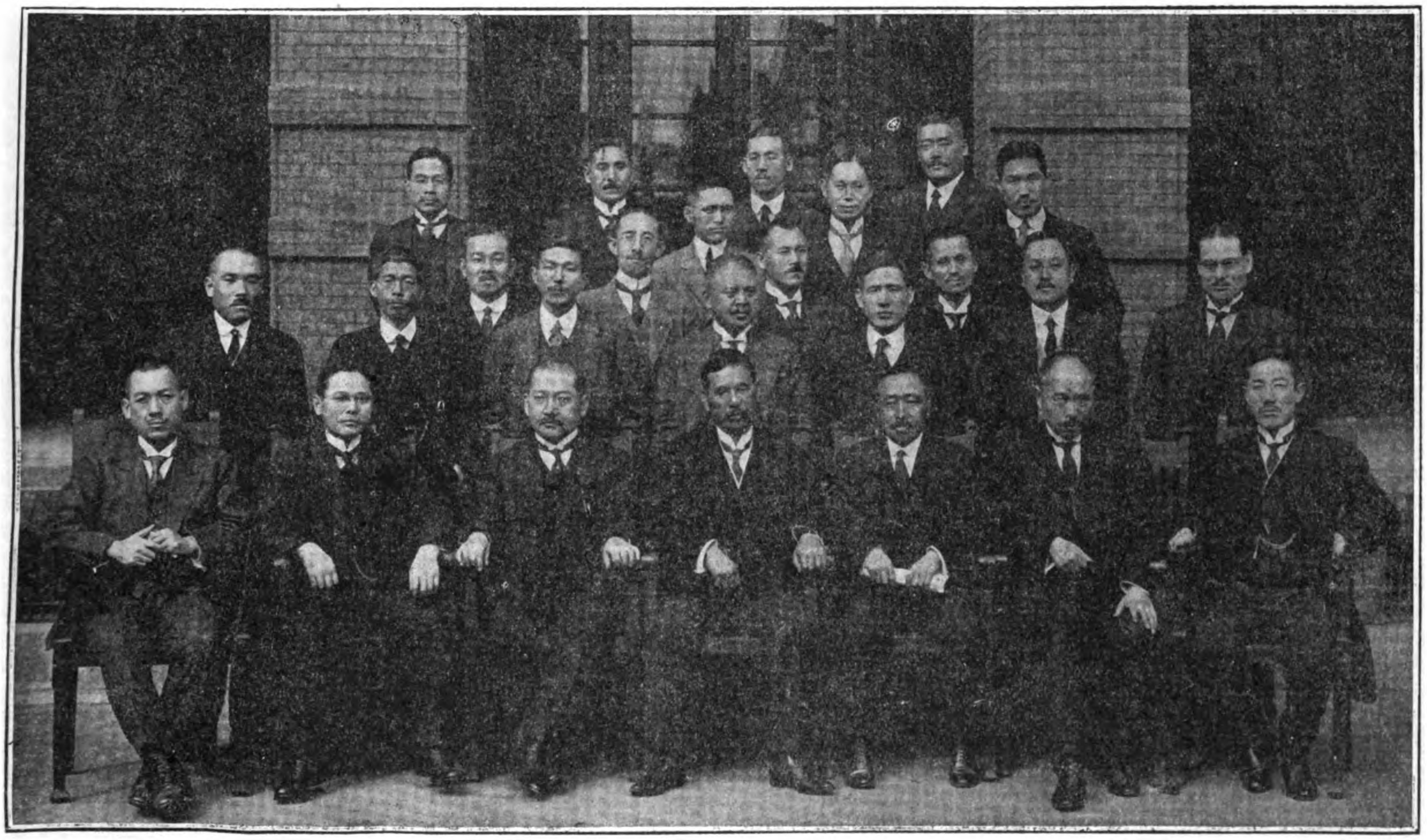
Japanese Merchants in China

COMMENTING upon an important event of the month, the first conference of Japanese chambers of commerce in China held during February in Shanghai, the *Celestial Empire* says this "is a matter of more than passing interest, even if only the fact is considered that it is the first time Japanese merchants from all over China have met together to consider matters in which they are more particularly interested. But besides the fact that the conference marks the inauguration of a new association of foreign merchants which will have for its object the expansion of foreign trade in China, the proceedings appear to have been highly interesting in themselves. The reports published, of course, are all from semi-official sources, but it is usual in China for such conferences to be held in private, and in that respect the conference followed the example of the British chambers of commerce, and in any case there could have been no reports published in the foreign papers in Shanghai, even although the meetings had been open to the press, if they had not been supplied by those interested. From the resolutions proposed and adopted, and the brief references to the discussions which are published, it appears that the conference was above all things eminently practical. The resolutions passed have generally the good of trade for their object, and most would tend to promote the prosperity of China as well as the interests of foreign commerce. Of course, the extension of Japanese influence is above all desired by Japanese merchants in China, but it is by legitimate means that it was proposed that that influence should be extended. It is interesting to note that the methods of the Japanese government were fairly frankly criticised by the proposer of the first resolution. The discord that has existed between China and Japan and the economic boycott of Japan which prevailed in China for some time is laid at the door of Japan's militaristic policy. The speaker recommended that the relations between China and Japan should on the contrary have a social basis. The conference in several resolutions affirmed its adherence to the principle of the open door, and judging from the resolutions passed Japanese merchants in China, as represented by their chambers of commerce, are anxious to co-operate with other merchants in promoting the interests of trade in China and concurrently the prosperity of China. There can be no doubt that such conferences tend to clear the international atmosphere and to promote good understandings, and they are therefore to be welcomed. Matters which are discussed even semi-publicly are likely to be properly conducted. Mr. Yamasaki, the Japanese consul-general in Shanghai, who attended the meetings as an observer, indicated in a speech at the close of the proceedings that the Japanese government is interested in the conference and would give weight to the recommendations.



JAPANESE TRADE LEADERS IN CHINA

1st Row from the right No. 3—Mr. M. Nodaira (Chairman of the Conference and Chairman of Shanghai Chamber); No. 4—Mr. Y. Aioi of Dairen Chamber; No. 5—Mr. Osawa of Tientsin Chamber, etc.

Anglo-Chinese Trade

WHILE so much has been said in the last twenty years about the importance of foreign markets, it is strange that so little should have been done to secure and to expand the immense potential demand for European manufactures which is offered by China. The Chinese were a civilized race when our own ancestors wore skins and paint; they are remarkably law-abiding and industrious; in their own way, too, they are very religious, and although their ancestor-worship is not what we mean by religion, it has the advantage that, while a man may come to disbelieve in the existence of any particular God, he cannot bring himself to think that he had no great-grandfathers. Until recently it must be confessed that the western powers, to whom Japan and the United States must be added, have behaved very badly in China: they treated the Celestial Empire as "the sick man of Asia," just as if it had been a geographical area governed by brigands like the Ottoman Empire.

One of the most hopeful features is the formation of a new body called "The China Consortium," composed of bankers representing England, France, Japan, and the United States. International arrangements have been made before now with the object of getting things done in China, but there was not much pretence that the organisers had Chinese interests at heart, or were doing anything but pegging out claims for their respective countries. The new consortium has been arranged by Mr. T. W. Lamont on behalf of America and Sir Charles Addis, of the Hongkong and Shanghai Bank, on behalf of England. Speaking on the subject in New York, Sir Charles declared that the principle upon which the new China consortium had been formed was "the substitution of international co-operation in China for international competition."

The new arrangement is the result of protracted negotiations, and marks, we must hope, the victory of disinterestedness over territorial ambitions. During the Peace Conference bankers representing the four powers met at Paris, at the suggestion of the United States governments, to negotiate a new consortium. Unfortunately, Japan had ambitions of her own, and the foreign office at Tokyo announced that Japan would only enter the consortium with certain "reservations"; in particular, it demanded that Mongolia, Manchuria, and Shantung should be exempt from the operations of the consortium. Washington refused the demand, but the Japanese government appears to have made out that the powers had assented to its reservations. Mr. Lamont visited Japan and China on purpose to induce the Japanese foreign office to withdraw its reservations; in spite of many obstacles he succeeded, and is now able to announce that the consortium is to be "an international partnership for the purpose of assisting China in the development of her great public enterprises." It is only natural that the United States should take a foremost part in these negotiations, for, as the New York *Nation* says, "not only is American honor at stake, not only is the question of peace or war in the East involved in the terms of agreement, but American money must stand behind any loan to China. Great Britain and France, and Japan, too, can lend money to China only by first borrowing it from the United States."

Sir Charles Addis, in a second speech made at the annual dinner of the China Association, explained that one good point about the new arrangement was that it puts an end to the mischievous and dangerous system of spheres of special interest in China. The four powers have given up all individual concessions and options and have merged them in the common pool of the consortium. Moreover, they have undertaken not to establish any separate rates of interest in any future business which may come to them. Unlike the American writer, who seems to have an invincible distrust of the Island Empire, Sir Charles went out of his way to bear testimony to the loyal support of his Japanese colleague during the negotiation, and he is sure that Japan "will carry out the letter and spirit of the new agreement."

Modern trade is almost impossible without transport, and China is very badly served by railways, having, in fact, less than 6,000 miles in an area which is one-sixth larger than the United States. These railways, however, were earning a profit of 10 per cent. on the capital. Under the new arrangements all contracts for railways, material, and supplies will be open for bidding to the whole world. Hitherto, Sir Charles Addis says, railways in China have been constructed in sections by different nationalities; "in future railway construction will be by an international board." If the new China consortium can live up to its declarations a new era should open for the countrymen of Confucius, and it is to be hoped that English exporters will take full advantage of an almost illimitable market.—*The Iron and Coal Trade Review*, London.

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Complying with Railway Loan Agreements

THE time cannot be long delayed when American manufacturers of railway materials must again reckon with European competition in supplying the requirements of Chinese railways. Upon learning that the ministry of communications intended to purchase rolling stock from the proceeds of the recent loan for that purpose, the British and Chinese Corporation invited the attention of the ministry to the terms of its railway loan agreements which gives it the option for purchasing such materials. These agreements which cover the Tientsin-Pukow, Shanghai-Nanking and Shanghai-Hangchow-Ningpo lines also provide that British materials will be given the preference. The minister of communications, in his reply, is said to have recognized these options and rights.

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Japan's Foreign Trade for 1920

JAPAN'S exports and imports during last year amounted in value to Y. 1,948,415,000 and Y. 2,335,691,000 respectively, resulting in an excess of imports over exports to the amount of Y. 387,276,000. Compared with the preceding year, the figures show a decrease of Y. 150,397,000 in exports, but an increase of Y. 163,446,000 in imports. The exports from Japan of gold and silver bullion during last year amounted to Y. 3,897,000, while imports reached Y. 404,663,000, the figures showing an increase of Y. 77,186,000.

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Japan and India's Commerce

WE are hearing a good deal about Japanese competition with Great Britain in India. We always do when business is quiet. In fact when the cotton trade is depressed our competitors are always represented as on the point of ousting us altogether from our great Eastern dominion in all branches of commerce. Perhaps the view is excusable in the circumstances. When we are doing little, what our rivals are doing necessarily bulks larger in the public eye. During the war Japan's imports of all kinds into India and her exports from India went up largely. In imports her percentage of the total rose from 2.7 per cent. in 1913 to 10 per cent. in 1919. But 1920 is credited in the latest statistics with only 9 per cent. In exports the situation proves to be very similar—1913 10 per cent., 1919 13 per cent., 1920 11 per cent.

These figures, which refer to quantities, not values, do not indicate any great advance by Japan in her commerce with India at the expense of Great Britain. In fact they show, on the other hand, that whatever gains were made by Japan during the war

have since been at any rate partially lost. Whether Japan will be able to retain the 9 per cent. of imports and the 11 per cent. of exports is by no means certain. The share of Great Britain in the import trade of India in the first half of the present trade year (April to September) was 63 per cent., against 65 per cent. in 1913 and 45 per cent. in 1919. Of the export trade from India our percentage in the same six months was 21 per cent., against 25 per cent. in 1913 and 31 per cent. in 1919. England is evidently getting back to the pre-war position, and the recent progress has been made, it may be noted, in a period in which commerce has been seriously hampered by many adverse influences.—The (British) *Textile Mercury.*

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Japan's Trade Expansion

MR. Junnosuke Inouye, governor of the Bank of Japan, disapproves the negative policy of curtailment of production adopted by manufacturers of different lines in Japan. Mr. Inouye believes in the necessity of a positive policy to encourage and increase the export trade of Japan, as a means of disposing of any accumulated stocks of merchandise, and by mitigating the present limitation on production of various manufactures. He thinks efforts should be made to maintain the market developed abroad for Japanese manufacture during the war period, and to further develop market for the sale of staple products of the country in foreign lands. Many ways exist for encouraging development of export trade. The most effective and most important is to reduce the cost of manufacture by adopting the system of large scale industry and to supply goods at lowest possible prices. For this purpose a strong combination or alliance of manufacturers, exporters, shipping and insurance concerns is necessary. That, in brief, is his position in the matter.

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His Fortune for His Country

THE conviction that wealth owes a duty to society has impressed itself on the mind of Mr. Jiro Harada, a business man of Osaka, who has just made a deed of gift of all his property to the nation, represented for the purpose by the Imperial household board of audit. The gift amounts to Y. 10,200,000. It is to be applied for charitable and educational purposes according to the needs of the times and the judgment of the Imperial board of audit. The most remarkable feature is a provision by which the wealth will steadily increase until it will be the greatest foundation in the world. Only 40 per cent. of the revenue is to be spent each year, and the remaining 60 per cent. is to be reinvested. In the course of a generation the principal will have been raised to Y. 35,000,000 (about £4,500,000).

In 300 years the sum will be large enough to pay off the war debt of the world. As time goes on the snowball will increase, and Mr. Harada dreams of a far future when Japan will enjoy from his gift an income greater than she now possesses. It is a great dream. —London *Daily Express.*

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Proof of Friendship

JAPAN has a wonderful opportunity to give practical expression to her desire for closer and more friendly relations with China. In pursuit of its policy to bring about military co-operation between the two countries for common defense against the spread of Bolshevism, the Terauchi cabinet induced or instructed a group of independent Japanese bankers to advance large sums to the Peking government. Instead of being expended for legitimate or productive purposes, the proceeds of these loans were squandered in waging war against the Southern party or diverted into the pockets of the Tuchuns. Mostly the latter. China, or the Chinese people received no benefit, but they are called upon to pay the bill. These loans fall due this year.

China is almost bankrupt. The government faces the most critical year in the long history of the nation. By skilful management and robbing Peter to pay Paul, Chow Tsz-chi, the minister of finance, was just able to pull the government through the New Year financial crisis. He is now called upon to devise ways and means to maintain the present cabinet in power and preserve the nation from bankruptcy. His task is unenviable and it is one that deserves sympathy and support. One of the most pressing charges against the public finances is these so-called Nishihara loans, which fall due this year. Unless they can be converted into long term loans at a low rate of interest, China will be in a sorry plight.

The Hara cabinet has now the opportunity and the power to partially undo the errors of its predecessor and consent to the conversion of these unproductive loans into long term notes, and, if the Chinese government is at present unable to furnish adequate security acceptable to the bankers, then friendship and justice demands that in lieu thereof, the Japanese government should guarantee their bankers, and accept the good faith and general revenues of China, that in due time, they will be repaid. It would be unsportsmanlike for Japan to press China for the repayment of these loans when they fall due this year.

* * *

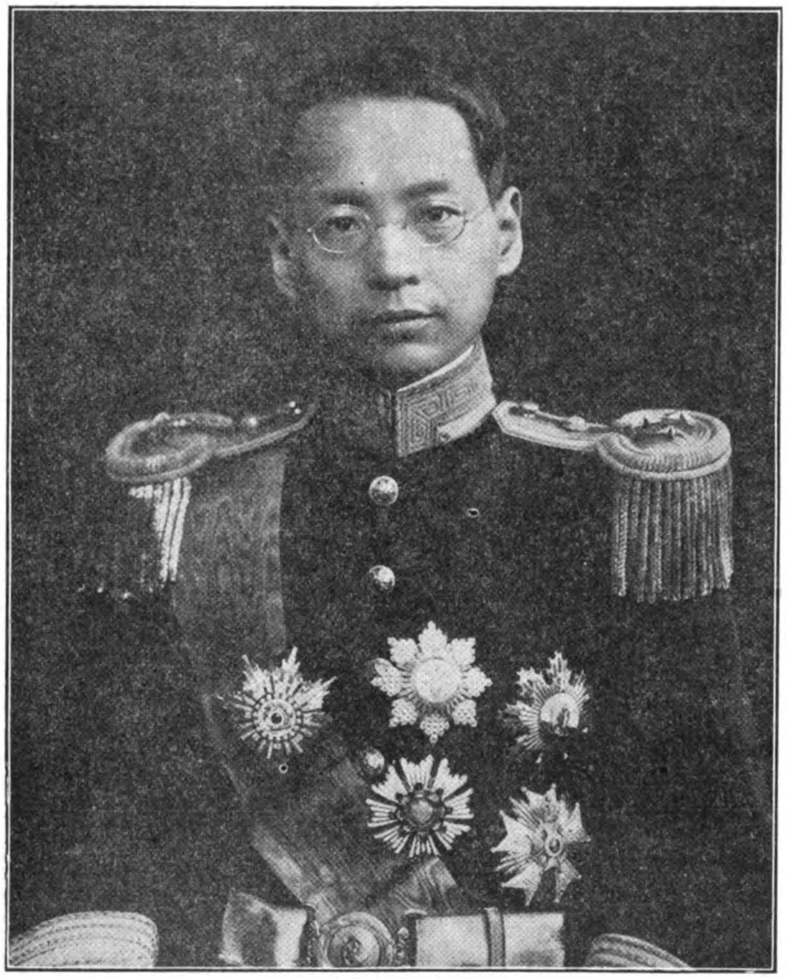
Well Merited

MR. K. C. Li, president of the Wah Chang Trading Corporation, has been awarded the Chiao Ho decoration by the Chinese government in appreciation of his efforts in developing the mineral resources and foreign trade interests of China. On various occasions we have invited attention to the importance of the pioneering work done in America by this modest, energetic young Chinese engineer and merchant, who has broken through the conservatism of centuries and blazed the trail to national commercial greatness that others must follow. Starting during the war with a small office in New York for the sale of antimony, the business of the firm has been expanded until it now enjoys the distinction of being the premier Chinese general import and export concern in New York. Mr. Li and his partner Mr. Liang, early recognized the advantage of conducting a direct business between China and America and foresaw that the time would arrive when the bottom might drop out of the antimony market, and success could then only be achieved in general importing and exporting. It took a long time and much persuasion to convince the conservative old Chinese capitalists of Changsha and Hunan that great profits awaited such a venture. That the capital was raised which enabled this firm to branch out and take its place in the commercial world is due in large measure to Mr. Li and Liang. Over sixty-five of the largest Japanese firms capitalized in the millions opened their offices in New York during the war, but outside of the Mott Street, curio store element, only one representative of modern China had the nerve and enterprise to enter the field and compete for the business of its country with older established, more experienced and better equipped foreign competitors. No foreign merchant of any nationality is more respected in the down-town commercial centre of old New York, than the modest, capable, Chinese gentleman who conducts the business of the Wah Chang Corporation from an office perched up in the top stories of the Woolworth Building. Amongst the many wearers of Chinese decorations, few are more entitled to the honor than K. C. Li. Peking is to be congratulated for this recognition of real service to the nation. It was well merited.

The Brains of the Chiaotungpu

THE most important official position in the Peking government is the one which controls the exchequer. Next to the minister of finance, comes the portfolio of communications, which brings in a steady and ever increasing income from the operation of railways, posts and telegraphs. The minister who directs the Chiaotungpu holds the most enviable position in China, and, fortunately for the nation, it has at last an executive in charge of this department who understands his business. Schooled under Sheng Kung-pao and Liang Shih-yi, the new minister Mr. Yeh Kung-cho, is without question the most brilliant and capable Chinese administrator who has been called upon to direct the operation of China's national railway system.

In urging a Square Deal for China in restoring the sovereignty of the government over its lost railway rights, we are simply reflecting the views of this expert in the intricacies of the international politics surrounding the transportation problem of his country. We collaborated with Mr. Yeh in Paris in drafting a plan that it was hoped might be acceptable to the consortium and which might serve as the basis of negotiations without loss to China's dignity. In 1914, we also co-operated with Mr. Yeh in designing a national system of railways for China (which was subsequently awarded the grand prize for excellence) and in organizing an international corporation designed to finance and construct the lines. Unlike many of his predecessors, Minister Yeh has been animated by a single desire to benefit his country and restore as far as possible China's absolute control over her transportation system.



Hon. YEH KUNG-CHO

China's Minister of Communications. Schooled under Sheng Kung-pao and Liang Shih-yi. China's foremost railway administrators. Mr. Yeh stands to-day as the best equipped expert on China's railway problems.

In years to come when the story of China's struggle for independence can be written by an impartial historian, the name of Yeh Kung-cho will stand out prominently as the one Chinese railway administrator, who, at all times, did his utmost to uphold the dignity and preserve the sovereignty of his government in eliminating spheres of political and commercial influence carved out by foreign railway concessions and contracts. If the consortium is to help China by creating a strong central government it will be greatly assisted towards this worthy end by giving careful consideration to the views of Minister Yeh Kung-cho, the Brains of the Chiaotungpu,.

* * *

Vanderlip's Diagnosis

FEW indeed are the Americans who correctly diagnose the basic causes of unrest in the Orient. Frank A. Vanderlip stands out as one of the very few who has applied his own brains to a profound study of the existing problems in this part of the world. Unswayed by propaganda and special pleading, Mr. Vanderlip has placed his finger on the root of the Far Eastern and Pacific problem. Speaking recently at the luncheon of the Radcliffe Club held at the Hotel Astor in New York he declared that it would be better to build a railroad in China than to make futile efforts to save the 10,000,000 lives perishing there now through famine. He maintains that the balance of trade is the most important issue of the world to-day and that no league of nations or any substitute for it could relieve present conditions.

" Congestion of population will always breed war," said Mr. Vanderlip. "It is because of congestion that all nations endeavor to branch out. That is why Austria is starving to-day. It is this same congestion that is costing the lives of millions in China. And when I say that I would rather build a railroad in China than save the 10,000,000 lives now being lost there, it is not from lack of sympathy for the situation there but because of a greater sympathy for the future generations. We must all be guided by intelligent self-interest—that is, interest for our people and an eagerness to progress, and a league of nations or a similar document would not encourage such progress. We must have an incentive for progress, and competition with other nations is the greatest and in fact the only incentive in trade relations.

" During the last seventy years the population of the world has increased 700,000,000. This increase of 1 per cent. a year is bound to bring about great economic problems. It has made it necessary for people to specialize and it has caused congestion in certain districts. In the case of China the population has increased so much more rapidly than the nation has progressed that they now find themselves in the deplorable condition of having millions of their people without food. Even if we could gather enough food for this vast number we could not get it to them in time to save their lives, for they have such inadequate means of transportation. Therefore, since we are unable to help these suffering people materially, it would be far wiser for us to centre our attention toward building railroads for them, thereby preventing a recurrence of such a condition and enabling the future generations to carry on trade with other countries."

The Reason is Plain

ACCORDING to the Tokyo *Yamato,* " German residents in Japan are steadily increasing in number. As compared with pre-war days, the number has been practically doubled. Most of the newcomers are employed by Japanese firms as engineers, or in some technical capacity." It would seem that the propaganda of Dr. Solf to use "German brains to develop Japanese industries" is bearing fruit. We have steadily condemned the movement which is turning Japan against America, and if Japan now calls upon Germany for technical advice and direction, American manufacturers will have only themselves to blame. Some day, Americans may have to hold an inquest into the causes which have brought about a loss of trade with their best Asiatic customer. The reason will be plain. They have been warned in time.

Mining Conditions in Inner Mongolia

JEHOL and Chahar are two of China's special administrative areas, independent of its twenty-two provinces. The latter are ruled over by *tuchuns* or military governors and *shengchangs* or civil governors, whereas the former are supervised by *tutungs* or high military officers. Jehol and Chahar are situated on the northern borders of Chihli and Shansi provinces, bounded on the east by Eastern Inner Mongolia and South Manchuria, and on the west and north by the southern portion of Outer Mongolia. Until the founding of the republic, Jehol was a favorite summer resort of the Manchu reigning family and it is still famous for its imperial hunting park, the celebrated art treasures of which are now housed in the Peking Museum of Curios and Antiquities, behind the Central Park.

Like many other places in China, these two areas are also rich in minerals. For example, as regards zinc, lead and silver no less eminent an authority than V. K. Ting, director of the geological survey of the Chinese republic, has testified to the fact (in the FAR EASTERN REVIEW, July, 1917, and February, 1919) that these three metals are chiefly found in north Chihli and north Shansi, "usually, small in amount but rather rich in silver—the richest galena from Jehol contains as much as 100 taels per ton." And as regards gold deposits of the recent alluvium variety, which is by far the most important, Mr. Ting also mentions that it is found in Manchuria and Outer Morgolia . . . "and in the small streams in Shantung, Honan and Jehol."

On the Way to Jehol

Below are some notes summarised from a recent report to the Ministry of Commerce and Agriculture by one of its technical experts. They refer to gold, coal and lead deposits in these two areas.

GOLD DEPOSITS.—The report describes gold deposits in the West Chan-tse Creek, in the district of Ch'eng-teh, and distant from the district city about 40 *li*. It is not known when this mine was first worked, but until 1909 the pickings were all done by native inhabitants. In the summer of that year the Tutung of Jehol conceived the idea of working the mine on an official basis. A certain Mr. Wu was put in charge and some $5,000 was invested. The undertaking dragged on for four years and the mine being worked at a loss, operations were then suspended.

The deposits spread over three mountain ranges and the belts are fairly parallel. They lie from east to west, about three or four *li*, and then drop from north to south at an angle of eighty or ninety degrees. The most northern layer has an average width of one foot; the central belt, two and a half feet; and the most southern belt, six or seven feet. Of the three the central vein is the richest in gold. Owing to geologic changes at various periods none of the veins is one continuous, unbroken whole, but all are broken in the middle and these tend to make one overlap into the other—a fact which deserves to be remembered especially by future prospectors.

The old mining area is not definitely located. From north to south the length is about seven or eight *li*, and east to west five or six *li*. The two deposits which merit the most attention are those in the central vein and the washings in the Chan-tse Creek itself. As far as could be ascertained, the total output of the old mine was 648 ounces of gold, whereas the washings in the stream amounted to only 14 or 15 oz. Of these 648 oz. the northern and southern veins produced only fifteen ounces each: the entire remainder was credited to the central vein alone.

To estimate the wealth of such deposits, let us take the following figures. The excavated portion of the East Creek Mountain range is 150 feet long and 150 feet deep and 2½ feet thick, or a total of 56,250 cubic feet. The second excavation in the Ying-p'o range is 100 feet deep, one-half *li* or 600 feet long and 2½ feet thick, or a total of 150,000 cubic feet. The total output of the central vein being say 600 oz., divide 600 by 56,250 plus 150,000 or 206,250 cubic feet, and the result is 0.0029 oz. of gold per cubic foot. So if the vein be three *li* or one English mile long, 50 feet deep, and 2 feet thick, the total gold-bearing capacity would be 2,088 ounces.

Under the circumstances, the mine is by no means poor, since the gold-bearing vein in the state of California is known to be capable of producing 0.001 oz. per cubic foot, whereas here it is 0.0029 per cubic foot. Yet owing to unscientific methods of working, etc., the less rich vein is the more prosperously worked of the two!

The streams also seem to abound in deposits, as the natives could be seen gold-washing half the time and ploughing their fields the other half of the time. But the efforts do not appear to be very productive, the net results being only two or three grains of the precious metal.

COAL DEPOSITS.—Coal abounds in Jehol and Chahar, and the above-mentioned report to the ministry of commerce and agriculture refers to coal mining in two separate districts: Fou-hsin Hsien and Ch'ao-yang Hsien.

As regards the former the first mine in Chia-ma-so was opened by one Mr. Chang in 1899 who was immediately followed by a number of other native prospectors. The methods of operation, however, were primitive and nothing tangible was obtained. In 1904 an English engineer, Mr. Mole, was sent by the Peking ministry of communications to report and investigate, etc. Shafts were sunk to a depth of 300 or 400 feet and the locality was found to abound in coal. Somehow or other operations were discontinued four years after, but at present there are still ten places in the neighborhood which are being operated by native inhabitants. Almost continuous with the coal strata of Chia-ma-so are the coal beds of Lama Camp, but the superstitions of the local Mongols have heretofore barred any prospecting and development. Recently,

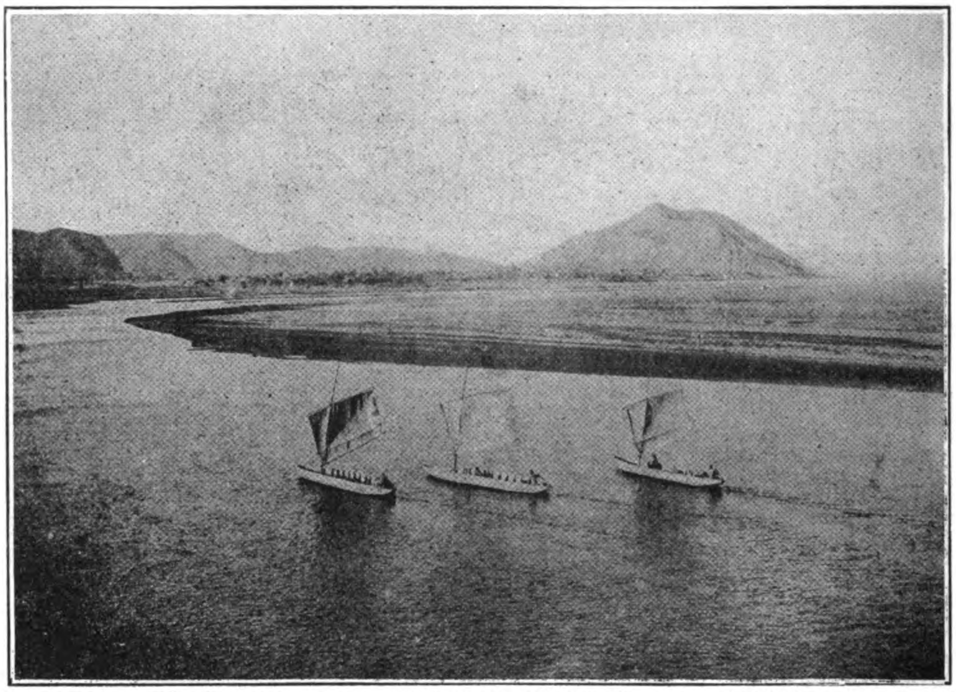
however, the Hua Feng Industrial Development Company, of Tientsin, has applied for official permission to mine both places, the areas of which are estimated to total over 30,000 *mow* or 5,000 English acres.

Chia-ma-so is situated at the east of Fou-hsin district city, distant from Mai-chia-wo Station, on the Peking-Mukden Line, 120 *li*. Lama Camp is situated north-east of Chia-ma-so and separated from it by a distance of 10 *li*. The whole area is covered by a layer of yellow soil, but the country is most flat, unbroken by either rivers or mountains. Coal is met after digging 40 feet and the coal seams then incline 35 degrees to south-east. The bed is over 20 *li* long. Two coal layers have been seen and between them is a layer of sandstone two or three feet in thickness. The coal stratum above this sandstone has an average thickness of two or three feet; whereas that of the stratum below the sandstone is from 15 to 16 feet. Consequently most of the excavations have been on the lower stratum, as the coal is also reputed to be superior in quality. From the lower stratum the excavation can continue for another 30 or 40 feet, and then further progress will be stopped by the accumulating water.

The coal produced is bituminous and is of two grades: lump and dust. It is not suitable for smelting purposes, and leaves much ash. It contains a considerable percentage of sulphur and so is easily self-combustible. This self-combustibility may in most cases be due to faulty ways of storage, but it is also known to be due to the poor quality of the coal itself.

As expected, the methods of mining are primitive, although in one or two places a steam boiler is employed to generate steam and work the pumps, etc. The miners are paid 16 or 17 coppers a day, and each person is said to turn out 1,000 catties of coal a day. Operations are possible only in spring and winter, as there is too much water in the other two seasons. The coal produced is chiefly consumed locally or in the surrounding districts. The price is 15 to 20 silver cents per picul or 100 catties, and the transportation charges work out at one cent per *li* for every picul. The retail trade is in the hands of contractors who pay into the local taxation office an annual contribution of Tls. 11,000. In return for every thousand catties of lump coal turned out the contractors get 120 catties and the local Mongol chief 40 catties, and for every hundred baskets of coal dust the contractors get 12 baskets and the Mongol chief 4 baskets. In addition the purchaser has to pay the coal producer 100 cash for every 100 baskets of dust coal and 150 cash for every 1,000 catties of lump coal. These rates are said to be ten times higher than the regulation prices, but they are settled by local custom.

From 1899 to 1913 seven companies operating independently over 1,634 *mow* of land are credited with an annual production of 30,000,000 catties lump coal or a total of 420,000,000 catties. The quality of the coal being poor, it is probable that better coal might be found at a greater depth, which means of course more up-to-date methods of tackling with the water problem. On the other hand, unless operated on a large investment scale, it is not easy to find a good outside market for such output, since it can hardly compete with the coal from either Fushun and Pen-hsi-hu in the north or Kailan in the south.



The Lan River—the route to the Mining Regions of Jehol

The local inhabitants also speak of gold having been seen in considerable quantities in this district—a fact which seems to lend color to reports of the influx of Japanese into this region in increasing numbers. Consequently, the gold mine in T'a-tse Creek, 15 *li* south of Fou-hsin district city which was opened in 1906, became a joint Sino-Japanese enterprise in 1918.

Ch'ao-yang Coal Mines.—Ch'ao-yang district is rich in coal. The report to the ministry of commerce and agriculture refers to four coal mines in the north of this district, three in the south and half-a-dozen in the west, north-west and north-east, etc.

Of the four in the north two especially are worthy of mention. These were first opened by one Mr. Tu about the middle of the last reigning dynasty, say the end of the 18th century. In 1876 operations were suspended owing to the swamping of the mines; in 1896 the concern was made official and 7 per cent. of the production constituted the government royalty tax. Ten years after the royalty tax was increased to 15 per cent.: since then the undertaking reverted back into private contractors' hands and these pay into the official bureau an annual contribution of Tls. 10,500.

The most flourishing of these four is Mu-to-t'u-ou-lai situated 90 *li* north of the district city. Coal is seen at a depth of 125 feet and of a thickness of 7 feet, sandwiched between limestone and sandstone. The bed extends for quite 40 *li* and the coal is richly bituminous. It gives off a considerable amount of heat, but leaves a small quantity of ash, suitable also for smelting purposes: hence the native iron-workers of the locality all use such coal. These mines are included within the 30,000 *mow* applied for by the Hua Feng Industrial Development Company of Tientsin.

As in the Fou-hsin mines the methods of operation are primitive, although one or two boilers are also in evidence. The miners are paid from 14 to 20 coppers a day and the mining tax is in the form of perquisites to the contractors as follows: 15 catties per every 100 catties, and one copper cash for every basket of 100 catties of dust coal. The output is carried by carts or mules to the district city at the rate of 32 coppers per picul, and at the destination it is sold at 43 coppers per picul. Three companies are working on this mine, and their annual production is estimated at 1,500 tons, 900 tons and 140 tons, their respective areas and number of miners being 428 *mow*, 475 *mow* and 90 *mow*; 300, 450 and 220 men.

As in the Fou-hsin mines so in Mu-to-t'u-ou-lai, considerable capital is needed to develop this wealthy coal-bearing field, especially as the competition of Kailan, Fushun, Pen-hsi-hu and other richly capitalised mines must be taken into consideration.

The three mines in the south of Ch'ao-yang are separated from the district city by a distance of 170 *li* but are only 70 *li* from Nu-erh-ho Station, of the Peking-Mukden Railway. These were

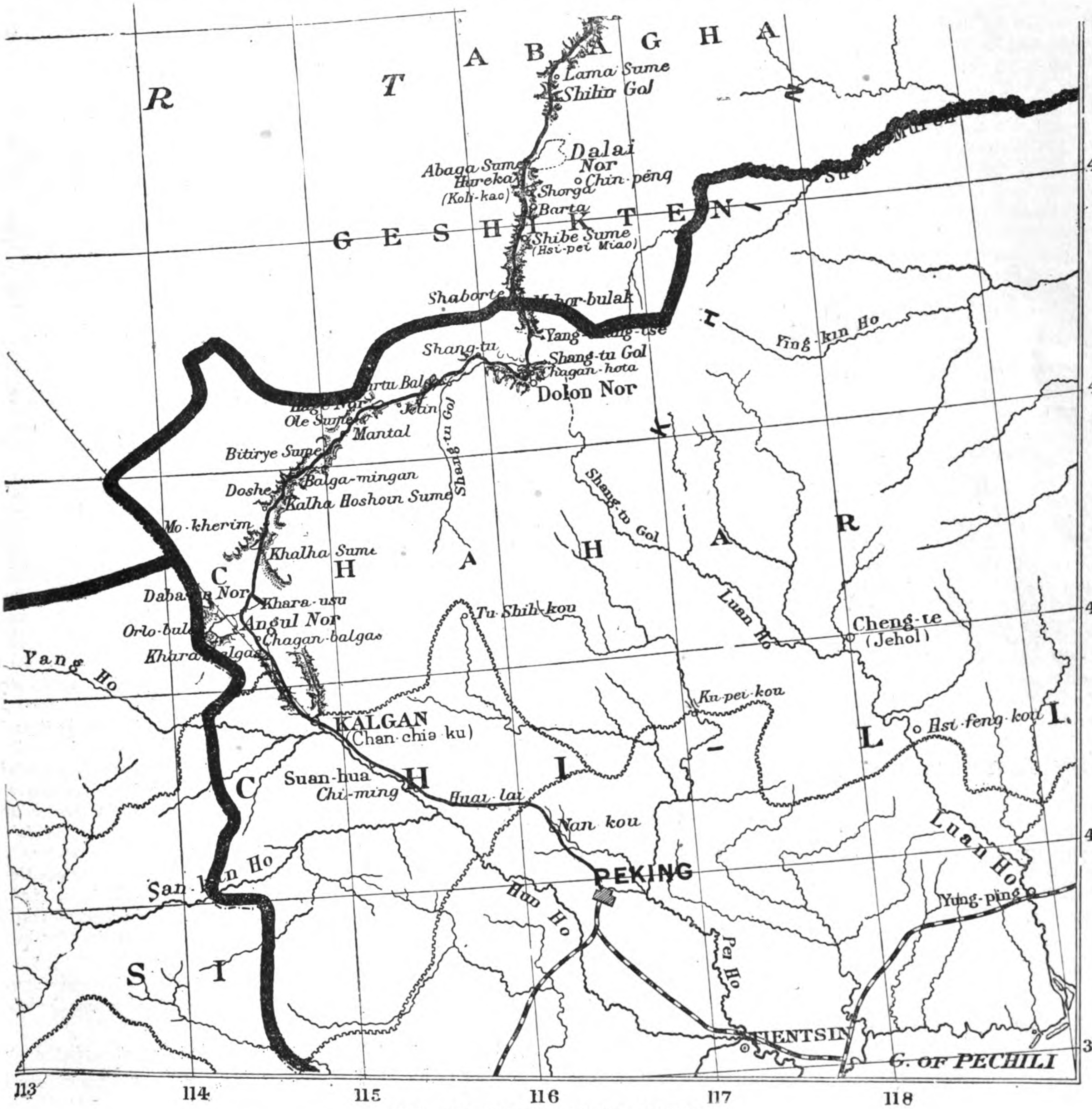
first discovered also about the end of the 18th century. In 1897 the three owners, owing to inability to tackle the water problem in their mines, sold them to the Peking-Mukden Railway Administration who sent the above-mentioned Mole to assist, etc. Work was continued for another four years and then operations were suspended owing to the depredations of the local bandits, etc.

The coal beds are 17 *li* long and 3 *li* wide. The seams are very rich, displaying after a depth of 320 feet no less than 10 different strata of coal, both anthracite and bituminous, of a varying thickness from three to seven feet. Both grades of coal are of superior grade, suitable for smelting and other purposes. Even operated by primitive methods the yield per annum is reputed to be 25,000 tons. Here the royalty tax is slightly lower. The contractors pay into the official bureau an annual contribution of Tls.1,500: so 10 per cent. of the output goes to the contractors and 2 per cent. to the Peking-Mukden Railway administration. The production is consumed locally, and in the neighboring villages it is sold at 20 or 30 cents per picul. Prior to acquiring these mines, the Peking-Mukden Railway administration used to spend over Tls. 30,000 a year in the purchase of such coal.

As in Fou-hsin, so in Ch'ao-yang gold deposits are reported to have been discovered in over ten different places, and as usual the Japanese are already on the spot investigating and prospecting, etc.

Lead Deposits

North-west of Kalgan some 180 *li* lead deposits are reported to have been discovered among three ranges—Big Silver Creek, Small Silver Creek, and Peony Creek. These ranges extend from east to west for 40 *li*, and within their hollows two old disused shafts are still discernible. According to stray pickings, the lead deposit is of superior grade, and the seams vary from one inch to 8 inches in thickness. According to the natives, these two shafts were sunk some 50 years ago to a depth of some 150 feet; since



MAP OF CHAHAI, INNER MONGOLIA

then they have not been used and now are more or less unserviceable.

In the same neighborhood are a number of mines producing either anthracite or bituminous coal. Two of these deserve some mention.

The first is T'u-mu-lu mine, situated 60 *li* west of Kalgan or 100 *li* from Kuo-lei-chuang Station, of the Peking-Suiyuan Line. The locality is very mountainous and very difficult for transportation. It was first opened in 1908 by a Mr. Li, a merchant from Mukden, who organised the Heng Shen Mining Company. It is capitalised at Tls. 80,000 and operates over a field of 940 *mow*. The coal produced is superior bituminous, burns with plenty of heat but leaves little ash, suitable for smelting purposes. The seams are of a thickness varying from 4 feet to 10 feet or more and are over 20 *li* in length.

There are 2 inclined shafts and present excavations have reached a depth of 340 feet. Three boilers have been installed, each with a capacity of 120 H.P. and costing altogether $3,800. The coal carriers are paid 6 coppers for every 80 catties carried to the pit-hole, and three carriers' work is calculated to be equal to that of one digger. There are altogether 100-150 miners, 11 pump men and 30 guards, representing a monthly pay roll of Tls. 400. The annual production is 9,600,000 catties or 5,800 tons. Each catty of coal is sold at 3 or 4 cents and the purchasers often coming from 100 *li* away, have to make their purchase at the pit hole. Accordingly the mining company does not have to worry about transportation or agency problems, but this labor-saving scheme is also the main cause why its output is restricted to only the neighboring market.

What may be considered as a stratified extension of the above is the coal bed of Ma-lien-chi-t'a which is distant only 15 *li* to the west. It was first opened about 1870, but one Mr. Chang and his Ch'eng P'ing Mining Company acquired it in 1908. The concern is capitalised at Tls. 12,000 and also operates over 960 *mow*. The coal is of the anthracite variety, most suitable for stoves and grates. The bed is 15 *li* long and has a varying thickness of from 5 to 12 feet. The methods of operation are similar to those of the T'u-mu-lu mine, except that the location here is higher and so there is comparatively less water to be encountered. The number of men employed varies from 60 to 200, including miners and pump men. The annual production is estimated at 3,175,000 catties or 1,900 tons.

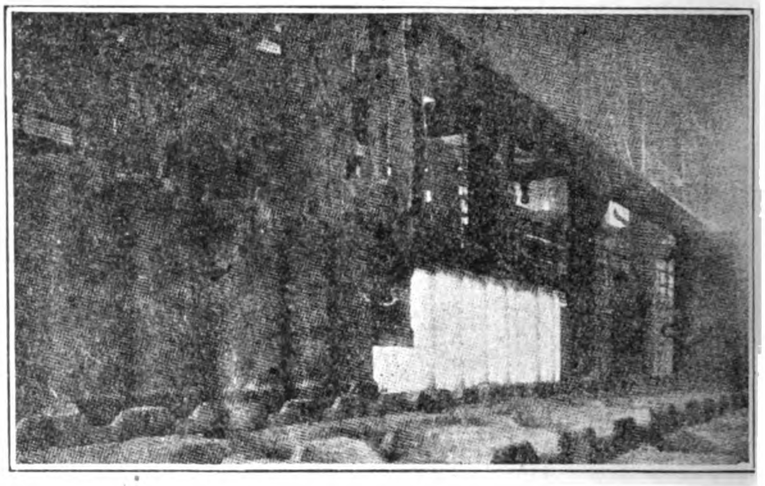
Forty *li* north-west of Ma-lien-chi-t'a is the Four-Village Mine. In 1896 it was first operated by small diggers ; in 1908 it reverted to the above Mr. Chang of the Ch'eng P'ing Mining Company. Owing to obstruction by a Chinese named Tuan, who succeeded in overawing the local magistrate, the mine is still undeveloped. On the other hand, Tuan himself declined to take out an official permit to work it, and so the mineral wealth is allowed to remain idle.

Why American Ingot Iron Costs More

By C. F. Faulk

AMERICAN ingot iron is more nearly a pure iron than any other commercial iron, it is more dense in structure, and the very small amount of impurities, or substances other than iron still left in its composition, are so uniformly distributed as to make their deleterious effect practically negligible. Its wonderful superiority in rust-resisting qualities is but one of the several uses in which this iron has won first place in the modern industrial world.

The first step in the manufacture of American ingot iron is the transformation of about equal parts of pig iron and ferrous scrap into ingots of the pure iron. This is accomplished by melting these two raw materials, together with lime, in the open hearth furnace. It takes from twelve to sixteen hours to melt down this mixture, or charge as it is called, and retain it in a molten state long enough to allow the removal of almost the last vestige of impurities. When at last the experts decide, with the aid of various chemical control and fracture tests that the molten metal or "heat" is ready to tap, the spectator is treated to a sight that would take the pen of a Dante to describe. With a roar of sound and a burst of light that can only be viewed through clouded glasses the great stream of liquid fire bursts forth from the furnace with seemingly irresistible force only to be quickly caught and securely retained in a great iron receptacle lined with brick and called a ladle. Probably here is witnessed one of the most spectacular differences between the making of ingot iron and ordinary steel. The iron is tapped at a temperature of from 3,000 to 3,100 degrees Fahrenheit, while steel is tapped at from 2,700 to 2,800 degrees Fahrenheit.



Ordinary pig iron and scrap cannot be used in the making of this special iron. Special stress is laid on a very low copper and sulphur content. Of course selected scrap and pig iron cost more money as is the case with every selected commodity. Even the coal which is used to make the gas that rolls in waves of fire over the molten bath must pass under rigid inspection and analysis, lest it carry sulphur in sufficient quantities as to allow its absorption into the molten iron. Any coal containing over one per cent. sulphur is rigidly rejected. No extra cost in material is too great and no detail too minute if it but contribute to the elimination of impurities and thus increase the service of the finished iron. One illustration is the use of pure aluminium as the degasifying agent in the ladle. In degasifying American ingot iron there are several methods which could be used but the method used involves the most expensive materials and processes because they give the highest degree of degasification.

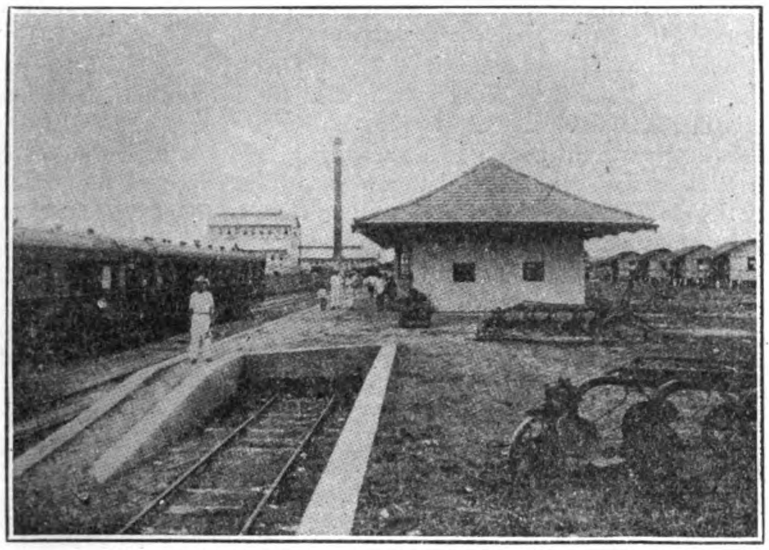
The extra material cost of ingot iron over steel does not stop with the quality of the materials used but is further increased by the quantities necessary. Fuel for heating is the big item in this connection. As has already been pointed out ingot iron must be heated to a great deal higher temperature than steel in the open hearth. This statement holds true in all subsequent steps of manufacture where heat is required, as in the soaking pits, the bar, sheets, and annealing furnaces. Moreover the higher heat must be maintained longer in each of these operations. In the open hearth an ingot heat requires on the average one-third more time than a steel heat. In the soaking pit the ingot of pure iron requires an average of eight hours as against six hours for steel, and in the annealing furnaces the additional time for ingot iron sheets runs into several days.

All operations that require excessively high temperatures and the consequent additional skill and care also increase the labor cost.

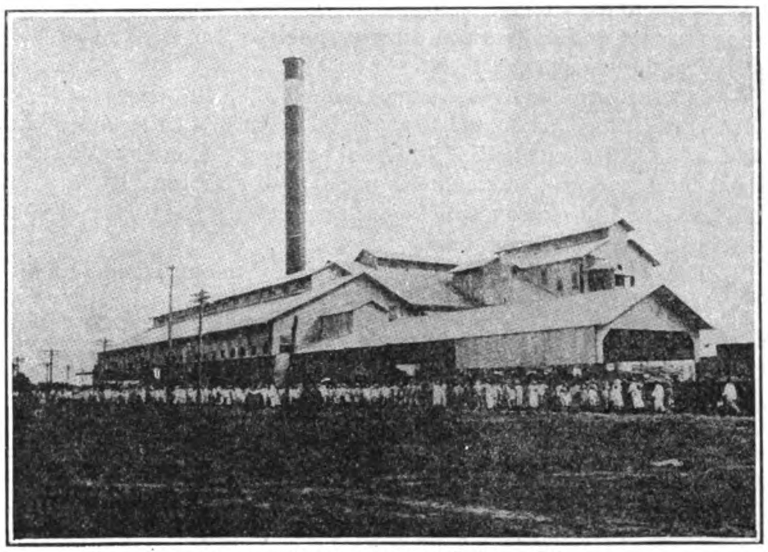
American ingot iron is made under the most perfect conditions and with every mechanical facility that careful research can discover or engineering ingenuity devise.

Sugar Activity in the Far East

THE correspondent of the *Louisiana Planter* at Honolulu, under date of September 1, 1920, says that sugar mill machinery manufactured in and shipped from Honolulu within the last two weeks had a total value of approximately $650,000. On the steamer *Eastern Importer*, which left recently for Iloilo, Philippine Islands, a shipment of machinery worth $400,000 was despatched by both the Honolulu Iron Works and Catton, Neill & Co. Another shipment which left a few days later for Manila was valued at $250,000.



Carmen Sugar Central in Back Ground, Luzon, P.I.



Carmen Sugar Central, Luzon, P.I.

Catton, Neill & Co., iron founders of Honolulu, have purchased seven and one-half acres of land on the Iloilo river, near the wharves of Iloilo city, Panay, P. I., and will erect there a foundry of sufficient size and capacity to take care of any work which may be required on Negros or neighboring islands. With a plant at Iloilo the company will have a strategic advantage over Manila enterprises in handling the business of most of the sugar mill sections of Negros, for the reason that Manila has to ship machinery or other materials to Iloilo and have it lightered across the channel, 27 to 30 miles, to Negros. The new plant will cost in the neighborhood of $100,000. It is still the purpose of the company to establish a branch at Manila to take care of work on the island of Luzon.

In the opinion of Elmer D. Merrill, director of the bureau of science of the Philippines, American control of the Philippines has made the islands what they are to-day. "Sugar centrals," he says, "have come into operation within the last few years and it is noted that the people most interested in this industry are two Hawaiian concerns, the Honolulu Iron Works and Catton, Neill & Co. So far as I can see, if the government remains satisfactory, there is no reason why the islands should not exceed Hawaii in the production of sugar. The development of the Philippines, I think, has been due in no small degree to the character of the first American administrators. They were men of the pioneer type who wanted to see what could be done. They were asked to do the seemingly impossible, and succeeded in accomplishing it."

Sugar Cane in Occ. Negros

Formosa Sugar Notes

There are 37 sugar mills in Taiwan equipped with modern machinery. Most of the machinery is of British make, although American and German machinery is also in use. There are about 250 mills of primitive types, which appear to owe their existence to the difficulty of transporting the cane in some of the more remote districts, and there are 24 mills of the primitive type classed as "improved."

Production and exports during the past five years were as follows:

Year.	Production.	Exports.	
		Raw sugar.	Refined sugar.
	Pounds.	*Pounds.*	*Pounds.*
1915 ...	... 459,567,351	435,694,543	29,586,400
1916 ...	... 707,786,106	656,154,995	52,641,152
1917 ...	... 1,009,868,580	844,546,107	79,221,894
1918 ...	... 758,645,205	600,560,943	75,599,782
1919 ...	... 643,227,998	551,244,341	138,182,629

The general prosperity of the sugar industry in Taiwan is shown by the fact that the greater part if not all of the principal sugar companies are contemplating substantial increases in capital during the present year. This would seem to indicate, to some extent, plans for future expansion of production equipment which should give opportunities for the sale of agricultural, milling, and refining machinery.

Hongkong Notes

During 1919 Hongkong imported 403,733 short tons of sugars, compared with less than half that amount in 1918. Of this sugar Java furnished the greater portion. It is stat-

ed that the imports from the Philippines were smaller in 1919 than in 1918, the demands from the United States taking the Philippine stocks away from the Hongkong market. Of the 474,000 tons imported in 1918 into Hongkong, 338,000 tons came from Java; the Philippine Islands gave 96,000, China 25,000, and the Straits Settlements 13,000. In 1919 372,000 short tons of sugar were reported; of this 282,000 came from Java, 57,000 from the Philippines, as against 96,000 the year before, and 29,000 from China and Indo-China. In addition to the raw sugar, nearly 12,000 tons of refined white sugar were brought in from Java.

Java Notes

Through the medium of the General Syndicate of Sugar Manufacturers in Netherlands India, 153 out of the 184 factories who have joined that body, supplied particulars relative to the sugar cane harvest and cultivation during June.

The figures showed that:

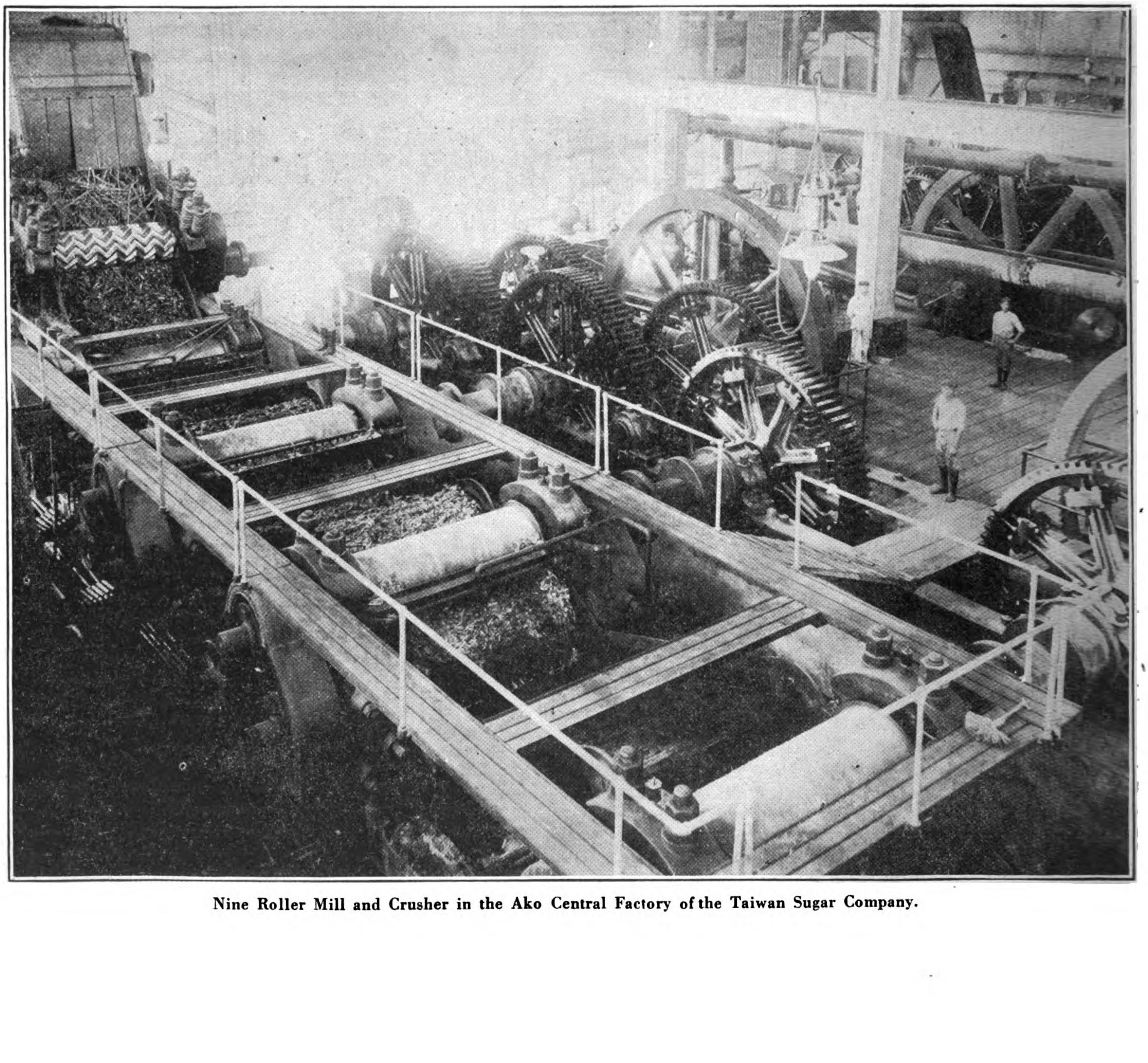
146 factories harvested cane, namely, 29,669 bouws (=21,055 H.A.) resulting in 30,366,469 piculs (=1,875,433 tons) of cane and 3,633,273 piculs (=224,700 tons) of sugar (converted in standard muscovados). Calculated per bouw, therefore 1,024 piculs of cane and 123 piculs sugar (equal respectively to 89.12 and 10.70 tons per H.A.) were obtained.

The average rendition during last June amounted to 11.98.

Farewell to Commercial Secretary Rose.—Upwards of seventy guests attended the farewell tiffin to Mr. A. Rose, C.I.E., British Commercial Secretary, at the Grand Hotel des Wagons Lits, February 18. Mr. A. C. Henning, chairman of the British Chamber of Commerce, was in the chair. Among those present were Sir Beilby Alston, Sir Frances Aglen, Bishop Norris, and Messrs. Clive, Bowra, Barton, Barson, Hubbard and representatives of all the leading firms in Peking.

Canton Railway Employs Women.—More than thirty Cantonese women have entered the employ of the Canton-Samshui Railway, four of them as secretaries and the remainder as ticket-collectors and inspectors. Other companies, including the Telephone Exchange, are, it is understood, conceding the demands of the Women's Union for the employment of women and girls on equal terms with men.

Sales of the Tobacco Products Export Corporation in China have increased 300 per cent. per month over the business done at the start of the current year. Plans are being laid for a further increase in 1921 and on the basis of these plans it is expected that sales by the close of next year will be running close to 1,000 per cent over those in January and February of this year. So elaborate are the plans for expansion in China that it has been decided to have one of the leading offices of the company make a trip to the Orient and personally take charge of the company's operations there. This man will sail for China next month and will remain several months on the ground.—*The Wall Street Journal.*

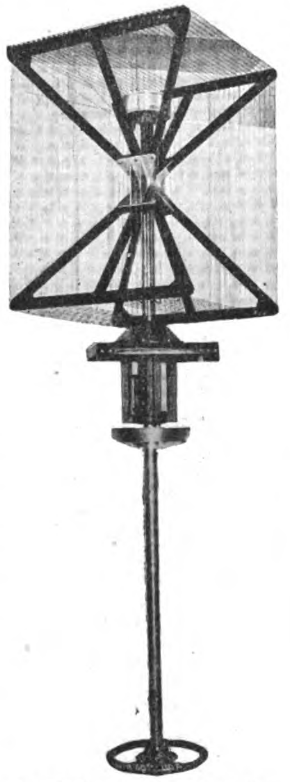


Nine Roller Mill and Crusher in the Ako Central Factory of the Taiwan Sugar Company.

Radio Compasses or Direction Finders in Modern War

THAT the late war brought about developments along the lines of engineering and communication which in peace times might have taken years to develop is now well known to all the world. That most of these developments where they relate to radio apparatus for radio telegraph and radio telephone communication are now made available to the commercial user and to governments of foreign countries is due to the WIRELESS IMPROVEMENT COMPANY of NEW YORK, U. S. A., who, during the war and since the declaration of peace, has been one of the largest manufacturers of radio apparatus in the United States.

Among the many devices, which this Company is now accepting orders for, are the radio direction-finder systems or radio compasses, which were perfected through the combined efforts of the allied engineers and which became such an important factor in fleet, submarine and aircraft warfare. As soon as it had been determined that these direction finders could be relied upon, the United States navy department adopted them and the necessary installations were made along the Atlantic coast line to enable the immediate locating of any enemy submarine, who might attempt to cross to United States waters. Navy vessels were also equipped. Great Britain also installed the radio compasses as did also France and Italy. Unfortunately for the allies, the German armies as well as their submarines also installed these devices, making it necessary for allied vessels to be extremely cautious in the transmission of messages, to prevent the submarine from obtaining their position. That the time is already here when the merchant marine as well as the naval and military arms of the governments of the world must install these radio compasses or be hopelessly left behind in the series of rapid developments which are taking place among the great nations, can now plainly be seen by anyone familiar with conditions.



RADIO COMPASS COIL

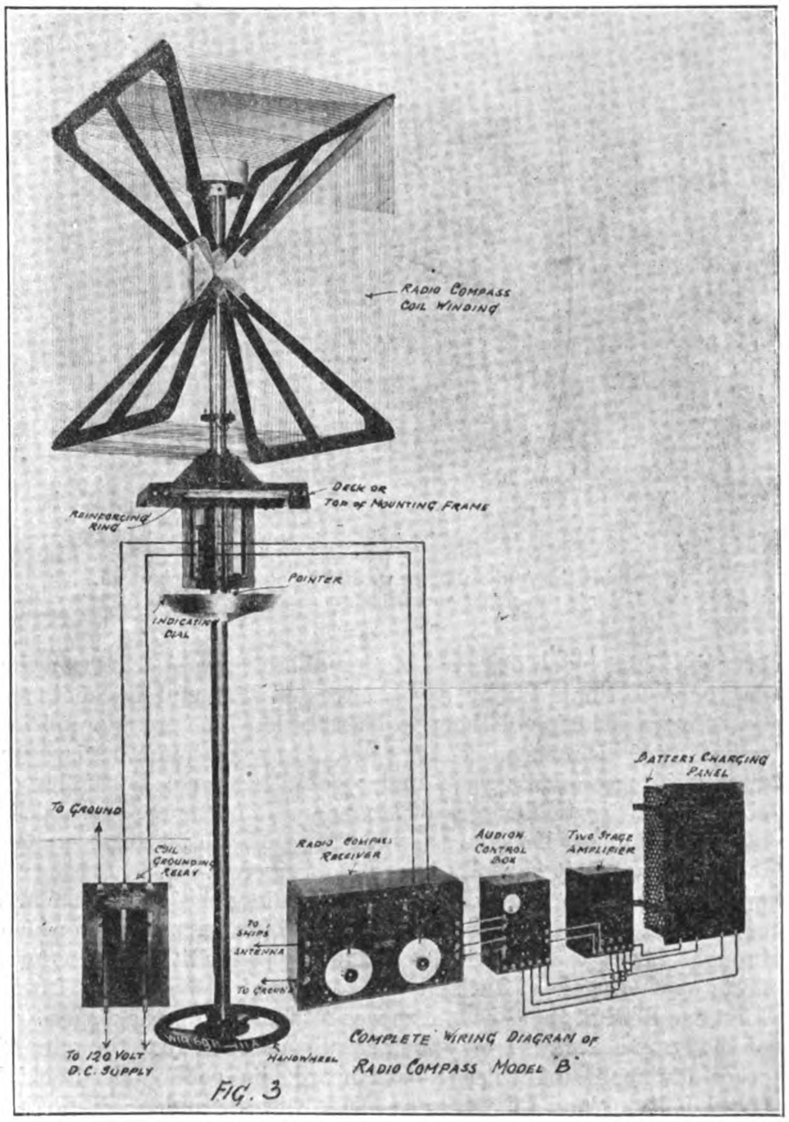
(By revolving this coil the signal direction is determined. It is connected by wires to the Compass Receiver).

The advance of science and engineering is by leaps and bounds, and that which had never been heard of until yesterday becomes the practical necessity of to-morrow. The operation of the radio compass, that is to say, its ability to determine the direction from which radio waves are coming can be easily described. A transmitting station radiates energy equally well in all directions. A receiving station employing a regular antenna (consisting, for example, of a number of elevated horizontal wires) picks up energy equally well from all directions. But if a closed loop is used in place of the receiving antenna, the sensitiveness is not the same in all directions. The exact conditions then are as follows :

When the plane of the winding of the radio compass loop is in direct line with the transmitting station, the compass loop is most efficient and picks up a maximum amount of energy from the transmitter. As the coil is rotated its efficiency diminishes, and when the plane of the coil is at right angles to the direction of the transmitting station, the coil efficiency is a minimum and no energy is absorbed from the transmitter.

The application of this principle is the basis of the radio compass or direction-finder. The radio compass coil is connected with a receiving set and with a multi-stage amplifier (for increasing the strength of all received signals). The compass coil is then "tuned" to the transmitter and the coil is rotated until the signal intensity increases to a maximum. This occurs when the plane of the radio compass coil is in line with the direction of the transmitter.

A dial, calibrated in 360° is usually attached to the shaft of the radio compass coil. The direction of the transmitter is "read" on the dial, the zero setting of which is usually adjusted either to true north or to the centre line of the ship, depending upon whether the radio compass set is installed on land or on board ship. That events of great importance in the late war were materially affected by results obtained from radio compass stations is not generally



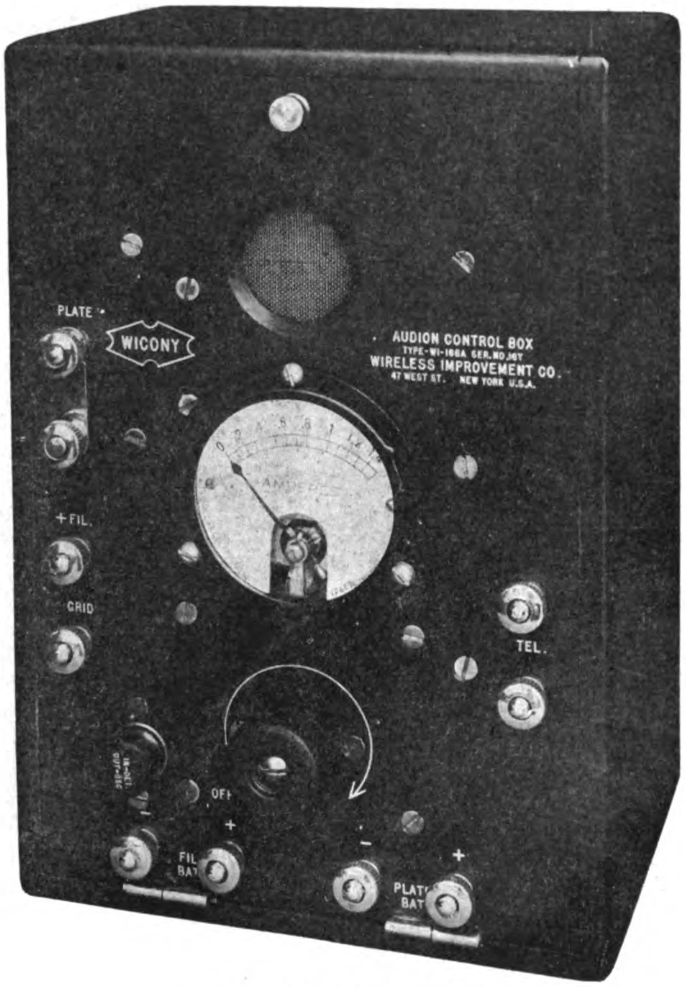
COMPLETE WIRING DIAGRAM OF RADIO COMPASS MODEL "B"

FIG. 3

known even now. Of course, during the war, great secrecy was maintained as to its operations. That no less a world-important engagement than the battle of Jutland was brought about through the ability of this "Wireless Eye" of the British navy to keep track of the German grand fleet may surprise and at the same time indicate to the engineers of other governments the importance and reliability attached to the operation of this device by the greatest sea power in the world.

In discussing a paper by Captain H. J. Round, printed by the Journal of the Institution of Electrical Engineers, March 1920, Sir N. B. Jackson, Admiral of the British fleet, said in part :

"The author states that the extent to which direction-finding was trusted by the authorities was really remarkable, and he instances a most important event in the history of the British navy brought about by an observed motion of less than 1½ degrees in the daytime. I think I may say we trusted him and his methods because we soon found them to be reliable. The trouble and intelligence of his staff reduced the errors to a minimum, and where strategical movements were under consideration a few miles of error in the North Sea was of secondary importance. I think it may be of interest if I give a few particulars about the case quoted in his paper, as it is really known to very few. We have heard much about the use of direction-finding for minor tactical movements of all arms, but this is a case of a major strategical operation which brought about the historical meeting of the British and German fleets at the battle of Jutland on the 31st of May, 1916. I was First Sea Lord at the time and so was responsible for the disposition of the grand fleet. I may incidentally mention that, in spite of other statements of which I have heard, its commander-in-chief (Lord Jellicoe) and I lived, so to speak, with the object of bringing off such a meeting. Our wireless direction-finding stations, under Captain Round, kept careful and very intelligent watch on the positions of German ships using wireless, and on the 30th of May, 1916, heard an unusal amount of wireless signals from one of the enemy ships which they located at Wilhelmshaven. This was reported to me ; the time was a critical and anxious one in the war and I had also some reasons for expecting that the German fleet might put out to sea during the week. Our fleet was ready at short notice and had arranged, unless otherwise prevented, to put to sea on the following day for a sweep of the North Sea. But if the German fleet got to sea first, the chance of a meeting in waters not unfavorable to us was remote ; our object was to try to get to sea before or shortly after the Germans, and hitherto we had not succeeded in doing so. Later on in the afternoon, it was reported to me that the German ship conducting the wireless had changed her position a few miles to the northward. Evidently she and her consorts had left the basins at Wilhelmshaven and had taken up a position in the Jade River ready to put to sea. This movement decided me to send our grand fleet to sea, and move towards the German bight at once and try to meet the German fleet and bring it to action. This they did with their usual promptitude, and the result was the famous battle of Jutland, and it was indirectly brought about by the careful and accurate work of Captain Round and his staff, for which I hope they will now accept my belated thanks and appreciation. Their work is not ended. Direction-finding has come to stay for more general use in peace. Errors are being eliminated and there should be a great future before it, especially on the lines indicated in the press to-day by the admiralty for assisting navigation at sea as well as in the air."

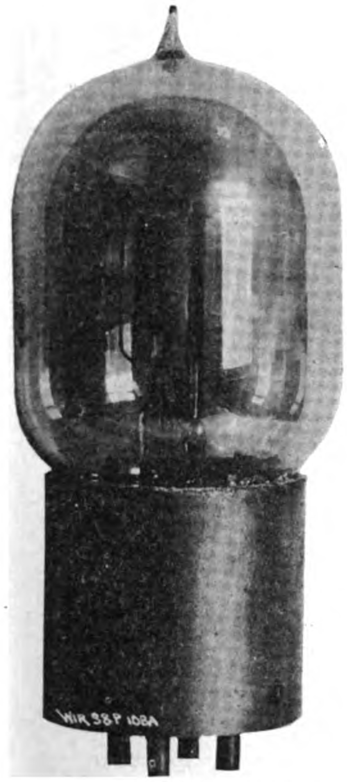


AUDION CONTROL BOX

(Contains the Audion Detector and its control mechanism. Detects the signal and transfers it to the Amplifier).

TWO STAGE AMPLIFIER

That the next war will depend even to a greater extent on radio direction-finders than did the last one goes without ques-



VACUUM TUBE DETECTOR

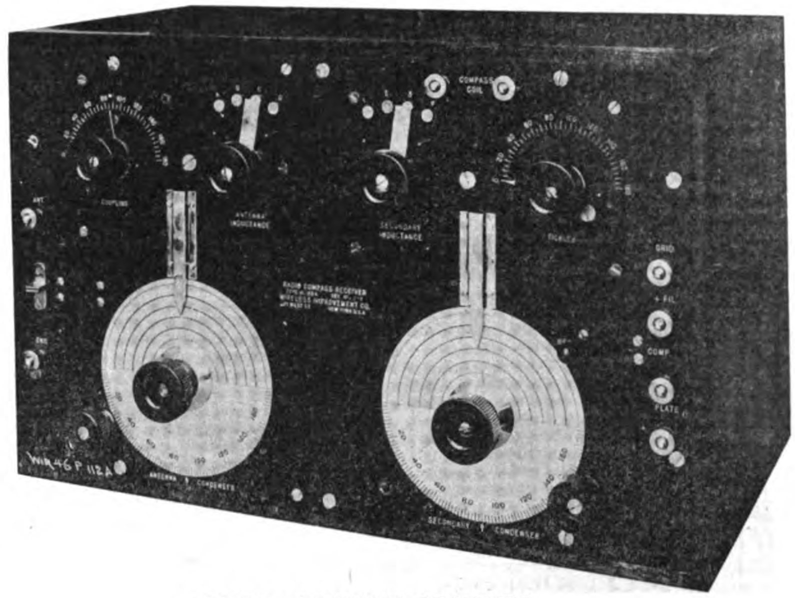
(Called the Audion. Is used in the Detector and Amplifier Box and both detects and amplifies the signals so they may be heard).

tion. Now that it has been proven that they will operate with great usefulness and accuracy, the nations desiring to be up-to-date will, of course, install them, not only because they have become essential in times of war but also because they are extremely useful in times of peace. Wherever aircraft is used the direction-finder will soon be found to guide the aircraft. Sea-going vessels will use them as an aid to navigation while the military arms of governments find them essential for many purposes.

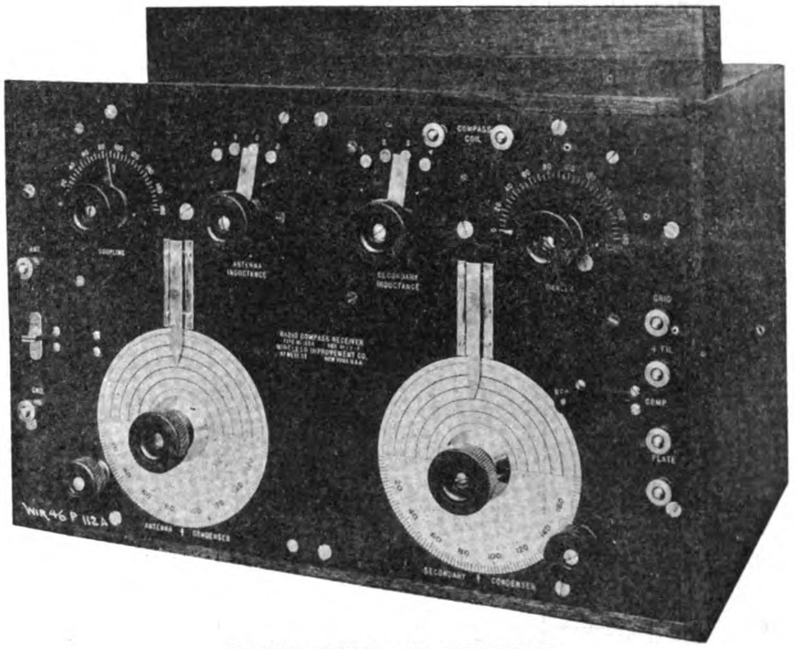
The engineers of the Wireless Improvement Company have designed these direction-finders in various forms, most suitable for land marine and aircraft installation depending upon the uses to which they will be put.

Speaking of this work—Mr. R. E. Thompson, chief engineer of the Wireless Improvement Company, says :

"When the war ended, there existed many systems and devices for use in radio communication which had not existed—or had not been developed and made practical prior to the war. Most of these developments had been kept secret so far as possible between the allied nations. The necessity for secrecy having ended with the war, the Wireless Improvement Company determined as far as possible to make these developments available to commercial interests and foreign governments. Even now it is necessary to make the sale of many of these new devices subject to the approval of the United States navy or war department. However, only in a very few cases do these departments refuse to grant permission, as the officers of these departments realize the benefits which will accrue to humanity through the adoption in peace times of the scientific developments which were brought about through the exigencies of war."



RAIDO COMPASS RECEIVER,
Type WI—153A



RADIO COMPASS RECEIVER

(This instrument is used to tune the coil to the wave length of the incoming signal. The receiver is, in turn, connected to the Audion Detector Box).

Big Decline in Japanese Toy Exports

AFTER the outbreak of the war, Japanese exports of celluloid toys became exceedingly brisk, but now that peace is restored the export of the articles has entirely stopped with the result that about seven million yen worth of the toys and material for their manufacture are now in warehouses. In this connection, an official in charge of the inspection of Japanese celluloid goods for export is quoted as making the following remarks: The celluloid goods exported abroad consists of toys and combs. The great decline in the export of toys is attributed to the fact that the Japan-made articles can hardly compete with foreign goods in point of quality and price, the material being higher in Japan than in foreign countries. This being the case no new orders have lately been received in Japan from foreign countries, with the exception of Australia.

American Locomotives for F.M.S. Railways.—Consul H. J. Dickinson reports from Singapore, Straits Settlements, that orders have recently been placed in the United States for 20 American-made locomotives for use on the Federated Malay States Railways, their use in the past having given every satisfaction. Ten of these locomotives will be delivered at Penang and 10 at Singapore.

Suzuki & Co. Increase Capital.—Suzuki & Co. has increased its capitalization from 500,000 yen, to 50,000,000 yen.

The Suzuki firm's assets exceed $250,000,000, and for years its small capitalization has been one of the unusual features of the world of international trade and commerce. The firm is owned by Madame Suzuki, who built it up from an enterprise of a few million dollars in assets to a gigantic enterprise with assets that place it among the most powerful institutions of the world. The firm remains a copartnership, with Madame Suzuki in full control, as heretofore.

Besides great fleets of ocean steamships, the firm owns banks, breweries, distilleries, manufacturing plants, immense agricultural enterprises, steel plants, shipbuilding plants and many other enterprises.

SHANTUNG FACTORIES AND WORKSHOPS WITHIN JAPANESE JURISDICTION

The following complete list of factories and workshops within the Japanese jurisdiction in Shantung furnishes convincing testimony in support of the revelations made in the February number of THE FAR EASTERN REVIEW

Name	Location	Proprietor	Industry	Capital	Area of site	Building space	Power	Employees
Nikka-Sanshi Co.	Wakazuru Str.	Nikka Sanshi Co.	Silk filature	G.Y. 2,500,000	sq. tsubo 17,900	cub. tsubo 3,034	Electric 25 H.P	Jap. & Chi. 1,000
Seito Shishyo Towa Co.	2 chyome	S. Miyake	Oil extracting and refinery and peanut grading	,, 1,000,000	6,941	1,135	87.5 ,,	Jap. 52, Chi. Male 200, Female 200
Toyo-Seiyu Co.	,,	The Co.	,,	,, 800,000	6,962	1,086	35 ,,	120
Santo-Yubo	,,	T. Hayashi, Director. Manag. Santo-Seiyu Co.	,,	,, 1,000,000	13,880	594	18 ,, 120 ,,	100
Mitsui-Yubo	,,	Mitsui Bussan Kaisha	Peanuts grading and oil, tallow refining	Head office furnishes	4,920	785	3.5 ,,	300
Seito-Seiyu	Ohkawa Str.	Seito-Seiyu Co.	Recasing, peanut and other vegetable oil	,, 1,000,000	1,170	325	Steam	—
Suzuki Co	No. 14 Sanjyo Str.	The Co.	Oil refining	—	2,200	625	15 H.P.	—
Yoshizawa-Yubo	No. 9 Sakai Str.	K. Yoshizawa	Veget. oil refining	As above	1,777	500	—	72
Minemura Yubo	Hazakura Str.	S. Minemura	Oil refining and cotton pressing	S.Y. 500,000	1,725	429	15 H.P.	25
Shinri Yubo	2 chyome. Wakazuru Str.	Shinri Co.	Oil, tallow refining	,, 50,000	765	161	10 ,,	Jap. 2 & Chi. 87
Yuasa Yoko	Hazakura Str.	T. Yuasa	Oil refining and cotton pressing	G.Y. 5,000,000	3,900	143	114 ,,	15
Tairi Shyokai	Hayagiri Str.	M. Matsuzaki	Oil refining, etc.	,, 80,000	1,375 sq. mt. and 162 sq. tsubo	130	8 ,,	30
Seito-Seifun Co.	Mikazuki Str. Taitung chen	The Co.	Flour mill	,, 500,000	5,667	1,438	Electric 275 H.P.	72
Santo-Hatabako Co.	Shiba Str.	K. Ito	Redrying of tobacco leaf	,, 500,000	3,020	366	45 ,,	92
Toho Koshi	Hayagiri Str.	Y. Fukuda	Work upon waste tobacco leaf	,, 300,000	400	300	7.5 ,,	40
Dairen Seihyo Co.	Mikazuki Str.	The Co.	Ice manuf't. cold-plant, table water	,, 500,000	1,074	357	63 ,,	62
Seito-Engyo Co.	Hayagiri Str.	The Co.	Salt grinding and refining	,, 1,000,000	2,336	1,630	24 ,,	125
Santo-Kagakukogyo Co.	2 chyome. Wakazuru Str.	S. Isono	Tallow	,, 100,000	2,471	208	Steam 26 H.P.	Jap. 5 & Chi. 300
Nagase Yoko	,,	The Co.	Peanut oil refining and grading	,, 6,000,000	3,290	307	Electric 5 H.P. 20 Steam 9 H.P.	
Nisshi Tampun Co.	Hayagiri Str.	T. Ishibashi	Egg factory	,, 500,000	1,500	435	15 ,,	167
Taisei Koshi	Sakai Str.	T. Arai	,,	,, 160,000	1,161	633	175 ,,	296

Name	Location	Proprietor	Industry	Capital	Area of site	Building space	Power	Employees
					sq. tsubo	cub. tsubo		
Santo Seijiku Co.	2 chyome. Wakazuru Str.	K. Nakamura	Match sticks only	S.Y. 100,000	4,529	366	15 H.P.	Chi. 120 and Jap. 5
Wada Seizaisho.	,,	M. Wada	Sawmill	G.Y. 250,000	3,270	630	150 ,,	98
Santo Kashi Co.	Taitung chen	K. Kobayashi	Matches	,, 1,000,000	4,200	1,350	20 ,,	662
Tohro Match Co.	——	——	——	—	4,900	1,230	5 ,,	720
Seito-Match Co.	Taitung chen	The Co.	Matches	,, 300,000	4,485	1,654	10 ,,	750
Chyuka-Shyokufu Co.	2 chyome. Wakazuru Str.	The Co.	Weaving	,, 500,000	672	325	40 ,,	
Seito Hariseizo Co.	Tsuboi Str.	The Co.	Glassware	,, 500,000	300	109	—	Jap. 50 and Chi. 65 11
Dainippon Beer Co.	Inui Dohri.	The Co.	Brewery	—	34,765	1,600	50 H.P.	138
Santo-Membo Co.	Aoyagi Str.	T. Yao.	Cotton thread and yarn	,, 250,000	1,000	240	7,5 ,,	100
Santo-Kasei Co.	Taishi chen	K. Kaneko	Bone power and glue	S.Y. 100,000	2,380	141	10 ,,	11
Meiji-Seikaku Co.	,,	The Co.	Hides, tanning and preserving	G.Y. 2,000,000	16,000	60	—	15
Tokuseiyoko	,,	K. Ishi-i	Tanning, dealing	,, 200,000	550	300	10 ,,	66
Shinjyo-Shyoten.	Taishi Dori	C. Shinjyo	Beef	,, 100,000	120	110	—	10
Naniwa Seiyu Co.	,,	Y. Fukui	Bean oil refining and extracting	Furnished by Head Office	1,400	100	—	20
Takahashi-Genen-Funsai Co.	Taishi chen North Strand	U. Takahashi	Salt grinding	G.Y. 150,000	3,500	200	10 ,,	45
Seito-Shyoyu Co.	Miyama Str.	The Co.	Cereals, soya	,, 500,000	300	200	—	38
Seito Somemono Co.	Daikoku Str.	The Co.	Dyeing	,, 200,000	120	67	—	25
Seito-Kamaboko Seizo Co.	,,	The Co.	Kamaboko (a kind of food from fish)	,, 50,000	15	15	—	13
Toyo-Shokusan Co.	Litsuen	The Co.	Knitting and panama hats	,, 100,000	1,000	100	—	240
Seito-Shimpo-Printing Department	Shizuoka Str.	T. Kido-o	Printing and paper	—	650	505	11 H.P.	150
Toyo-Insatsu Sho	Uusen Str.	I. Masaki	General printing and bookbinding	G.Y. 50.000	90	70	7 Printing machines	35
Uchida Yoko's Printing Department	Koto Str.	K. Uchida	,, ,,	,, 10,000	35	30	3 ,,	12
Dojingo	Santo Str.	T. Yorimoto	,, ,,	,, 50,000	50	50	6 ,,	50
Shinshyo-Yoko	Hiroshima Str.	N. Tsuge	Soap and candles	S.Y. 60,000	1,224	400	5 H.P.	125
Maruhishi Co.	Shizuoka Str.	T. Nomura	Ironwork	G.Y. 300,000	651	267	5 ,,	42
Todo Shyokai	Wakazuru Str. 2 chyome	K. Toda	,,	,, 150,000	720	300	10 ,,	24
Tentoku Tekko Co.	Wakazuru Str. 2 chyome	R. Takahashi	Ironwork and casting	,, 300,000	3,215	227	7.5 ,,	76
Hosei Konsu	Hayagiri Str.	T. Okamoto	Ironwork	,, 100,000	800	300	25 ,,	Jap. 13 and Chi. 200
Horimuki Tekko Co.	,,	K. Horimuki	,,	S.Y. 10,000	50	50	—	50
Otsuka Tekko Co.	,,	K. Otsuka	,,	,, 10,000	50	30	—	20
Shyoji Tekko Co.	,,	E. Shyoji	,,	G.Y. 5,000	10	10	—	20
Udaka Tekko Co., Taito Koshi	Wakazuru Str. 2 chyome	M. Udaka	,,	,, 10,000	100	65	—	18
Kagusesaku Co.	Saiwai Str.	E. Ito	Foreign and Japanese furniture	,, 30,000	280	100	—	42
Yutaigo Co.	Santo Str.	S. Sugitani	As above	,, 40,000	350	200	—	20
Mori Wayokagu Co.	Saga Str.	S. Mori	Furniture making	S.Y. 30,000	170	100	—	70
Nomura Yoko	Ichibacho	S. Nomura	,,	G.Y. 20,000	36	36	—	15
Ipponpi Co.	Aizuru Str.	C. Ippongi	,,	,, 50,000	210	105	—	80
Ikeda Kagu Co.	Tenshin Str.	S. Ikeda	,,	,, 8,000	60	39	—	14
Kawaguchi Co.	Taiko Str.	Y. Kawaguchi	,,	,, 2,500	30	30	—	20
Mikado Garage	Hijiyama Str.	The Co.	Motor hire service and repair	,, 800,000	338	251	5 H.P.	15
Seito-Insatsu Co.	Lison Str.	S. Yamashita	General printing	,, 100,000	60	50	—	Jap. 8 and Chi. 35
Nikka Sharyo Co.	Hijiyama Str.	The Co.	Ricksha garage and manuf't., repair	,, 200,000	510	300	—	52
Nakamuragumi Salt Washing Co.	Water Brake Seito Harbour	,,	Salt washing and grinding	S.Y. 100,000	2,988	228	35 H.P.	Jap. 4 and Chi. 65

Name	Location	Proprietor	Industry	Capital	Area of site	Building Space	Power	Employees
					sq. tsubo	cub. tsubo		
Seito Engyo Co.	Water Brake Seito Harbour	The Co.	Salt washing and grinding	G.Y. 100,000	626	380	8 H.P.	53
Seito Bussan Co.	Ohkawa Str.	K. Hiwasa	Peanut grading, etc.	„ 150,000	6,167	243	5 „	450
Seito Kosen Co.	Tanzan	The Co.	Mineral waters	„ 1,500,000	2,096	334	—	Jap. 8 and Chi. 10
Biron Kogyo Co.	Miyama Str.	„	Furniture	„ 500,000	186	36	—	20
Sito Shokuryohin Co.	Inuidore. Tai-tung chen	„	Manufacturing miso soy, etc.	„ 100,000	1,000	82	—	—
Tsingtauya Co.	Tokorozawa Str.	„	Shoes and bags	„ 100,000	28	28	—	18
Seito Seshu Jyozo Co.	Uuson Str.	„	Sake	„ 50,000	70	60	—	5
Santo Seishu Jyozo Co.	Miyamae Str.	„	„	„ 50,000	24	24	—	5
Santo Kanzume Co.	Pekin Str.	S. Yamaguchi	Canned meats, etc.	„ 7,000	50	50	—	12
Haizuka Seifun Co.	Wakazuru Str. 2 chyome	H. Haizuka	Flour mill	„ 50,000	In Tentoku Iron Factory	72	5 H.P.	Jap. 9 and Chi. 20
Tanaka Yokaiga Co.	Sainan Str.	S. Tanaka	Tiles	„ 30,000	85	85	—	20
Kenzaisha Seiga Co.	Wakazuru Str. 2 chyome	K. Nishio	„	S.Y. 3,000	200	80	—	20
Aoyama Renga Co.	Nishi Gokason	M. Aoyamo	Bricks	„ 3,000	1,300	15	—	50
„ „	Chyuka ai	„	„	„ 3,000	700	15	—	50
Tsukada Yoko	Taitochin Road & Shiho Road corner	H. Tsukada	Match boxes	G.Y. 20,000	1,000	20	—	18
Asahi Renga Co.	Nishi Gokason	K. Nishio	Bricks	S.Y. 10,000	2,500	30	—	36
Muramoto Renga Co.	Taitochin	S. Muramoto	„	„ 2,000	1,500	25	—	51
Asahi Renga Co.	Chyu ai	K. Nishio	„	„ 6,000	3,000	15	—	46
Jungosei	Shyosonshyo	T. Fujiki	„ (by hand)	„ 2,000	3,010	22	—	59
Tokuda gumi	„	K. Tokuda	„	„ 2,000	2,970	22	—	52
Ota Yoko	Shimoshiho	T. Ota	„	G.Y. 3,000	3,000	20	—	56
Oshiro Yoko	Shihoson, S. (Yellow Island)	T. Tsushiro	„	G.Y. 3,000	4,005	35	—	32
Koto Renga Co.	Koto	T. Hirayama	„ and tiles	S.Y. 20,000	15,000	1,100	—	300
Seito Seikan Co.	Taitungchin	G. Miyamoto	Manuf't. can or oil	G.Y. 500,000	4,000	600	—	Jap. 4 and Chi. 4
Okura Gyuhi Co.	Taiseichin	T. Ishibashi	Salting hides	S.Y. 300,000	—	120	—	15
Ishin Kagaku Kogeisha	„	K. Kojima	Dye manufacturing	„ 2,000	—	60	—	16
Katei Koshi	Taitochin	T. Matsunami	Soap „	„ 5,000	—	130	—	8
Hojyo Yoko	Taitunchen	K. Imachi	Japanese sake mf't.	G.Y. 15,000	—	160	—	8
Taishin Yoko								
Imono Co.	Sanjyo Str.	E. Ishida	Casting	S.Y. 50,000	—	300	—	43
Kutama Tekko Co.	Hayagiri Str.	K. Saegi	Ironwork	G.Y. 10,000	—	30	—	23
Tobayoko Tekko Co.	Miyama Str.	T. Tokiwa	Iron ware for mine, water supply	„ 300,000	—	30	—	30
Watanabe Mokko Co.	Chokurei Str.	K. Watanabe	Manuf't. furniture	„ 3,000	—	50	—	23
Kawaguchi Mokko Co.	Taku Str.	Y. Kawaguchi	House furnishing	„ 10,000	—	60	—	30
Yamaguchi Seiga Co.	Sainan Str. (Yellow Island)	T. Yamaguchi	Tile	S.Y. 20,000	—	90	—	22
Santo Renga Co.	Koto	T. Hirayama	Bricks and tiles	„ 10,000	—	100	—	130
Takahashi Koppun Co.	Shiho	U. Takahashi	Bone powder, oil extract, etc.	G.Y. 2,000	—	400	—	25
Ryudai Koshi Co.	Taiseichin	S. Homma	Tallow	„ 50,000	—	126	—	6
Koto Yoko	Koshyu Str.	T. Tokushige	Table waters	S.Y. 35,000	—	80	—	14
Seito Kanzume Seizo Co.	Sainan Str.	T. Hino	Canning	„ 100,000	—	—	—	—
Seto Seikan Co.	Wakazura Str.	S. Yamada	Cans	G.Y. 500,000	—	—	—	—
Sanye Shyokai Soko Co.	Soko	K. Fujisawa	Face paints	„ 12,000	—	330	—	15

CHINESE FACTORIES IN TSINGTAU

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	No. of workers
Tokusei Ei Imono Co.	Hayagiri Str.	Nin Shi Ko	Casting	S.Y. 1,000	sq. mt. 72	cub. tsubo 30	—	20
Kashyo Go	Tenshin Str.	Zui Ki Rin	Machinery	,, 20,000	sq. tsubo 42	42	Petroleum 9 H.P.	24
Yuchyo Shyoen	Chiifu Str.	Sha u Kyo	Soya, miso, pickles, etc.	,, 10,000	sq. mt. 3,600	cub. mt. 3,540	—	19
Dowa Shyo En	Hiroshima Str.	Chin Hei Tai	,, ,,	,, 10,000	900	300	—	9
Kashin Yo Shyo	Higashigokason	Chyo Den Shin	Bricks	,, 3,000	(Chinese way) 3 se	12	—	57
Detoku Yoshyo	Chyu Ka Ai S.	Den Ka Sai	,,	,, 2,000	2.5 ,,	9	—	35
Chuwa Koshi	Taitochin Tamare 7 Chome	Jyoseishyo	Lacquer	,, 2,000	sq. tsubo 200	60	—	16
Dogen Yu	Taitochin	Kaku Shi Ko	Dyer	,, 1,000	250	72	—	18
Wa Ko Yu	,,	O Fu Sai	,,	,, 51,000	100	30	—	20
To Sei Sai	,,	Ri Shyo Shun	,,	copper 2,500	chao 150	50	—	15
Fu Ho Wa	,,	Ri Jun Sei	,,	S.Y. 800	120	40	—	13
Fuku Wa Ko	,,	O Ki En	,,	,, 500	150	30	—	14
Gen Yo Ko	,,	Yo Sei Kun	Strong sake	,, 4,000	256	50	—	16
Gitai Shyo	,,	Gyu Seki Chin	,,	,, 4,000	120	30	—	11
Eijun Tetsu Shyo	,,	Den Den Toku	Casting	,, 4,000	120	100	—	23
So Sei Tetsu Shyo	,,	Bo Ho Shun	,,	,, 800	100	35	—	11
Chu Ji Go	,,	Chyo Chyu Tei	Straw rope	,, 1,000	200	30	—	10
Fuku Wa Shyo	Shyo Son	Jyo Chu Shu	Bricks	,, 1,000	1.5 se	10	—	31
Toku Shu Sei	Chyu Ka Ai	Ryu Shyo Den	,, and tiles	,, 4,000	2 ,,	10	—	59
Ko Shyo	Higashi Gokason	Chyo Zo Mei	Bricks	G.Y. 2,000	1.5 ,,	7	—	52
Ko Sei Shyo	Chyuka Ai	To Chyu Kei	Bricks	S.Y. 1,200	3.2 se	cub. tsubo 7.5	—	32
Zen Sei Go	Taitochin	Yo Ka Zen	Tile cement	,, 12,000	sq. tsubo 1,500	30	—	18
Fukuwa Shyo	,,	So Sin Gyo	,,	,, 9,000	970	20	—	17
Fuku Jun Sei	Nishi Gokason	Go Sei Zan	Bean oil extracting	,, 2,000	200	15	—	13
Dotai Yubo	Taitochin	O Shu Sai	,,	,, 4,000	140	22	—	12
Kashin Yoshyo	Higashigokason	Chyo Den Shin	Bricks	,, 15,000	3.5 se	12	—	57
Kyo Jun Ko	Nishi Gokason	Ka In Do	,,	,, 3,000	3 ,,	10	—	60
Zen Sei Go	Chyu Ka Ai	Yo Ka Zen	,,	,, 5,000	5.5 ,,	18	—	100
Giwa Yoshyo	,,	Yo Sei Kun	,,	,, 3,000	3 ,,	7	—	52
Gi Tai	Taitochin	So Shin Gyo	Cement & tile manuf't.	,, 9,000	sq. tsubo 350	18	—	21
Dotoku Yoshyo	Nishi Gokason	Denkasai	Brick manuf't.	,, 2,000	3.7 se	12	—	35
Bunko Yoshyo	Chyuka Ai S.	Tobun Ka	,,	,, 3,000	sq. tsubo 1,900	7	—	41
Dotai Shyoen	Taitochin	Oshyusai	Soya sake	,, 10,000	140	47	—	10
Doshyo Yoshyo	Shimoshiho	Jyoshyoho	Brick manuf't.	,, 3,000	4 se	6	—	62
Fukushyo Yoshyo	,,	,,	Tile manuf't.	,, 2,500	1,750 ,,	42	—	56
Doshyo Yoshyo	,,	O Hojin	Brick manuf't.	,, 2,000	2,400 ,,	6	—	56
Gentaisho Yoshyo	,,	Sonkanho	Brick tile manuf't.	,, 25,000	2,900 ,,	248	—	32
Ken Sei Wa	Shyosonshyo	Sokintei	Brick manuf't.	,, 2,000	3.6 se	7	—	45
Koshyo Yoshyo	,,	Jyochyu Shyu	,,	,, 1,600	2,000 ,,	10	—	37
Shyori Yoshyo	Kotoshi	Ryushu	Tile manuf't.	,, 20,000	1,200 ,,	270	—	120
Gohatsushunki Co.	Shindenson	Shyoshishun	,,	,, 25,000	14,000 ,,	457	—	140
Fukuwaei	Koseki Gai	Ryu Shizan	Tile & brick manuf't.	,, 50,000	6,000 ,,	400	—	100
Kyusei Koshyo	Taiseichin	Kogakusei	Socks, towels, etc.	G.Y. 10,000	—	33	—	28
Zuishyowa Tekko Co.	,,	Kankei Gyo	Casting	S.Y. 4,000	—	40	—	35
Eijun Tessyo	Taitochin	Denden Toku	,,	,, 4 000	—	64	—	23
Yukoshyoseiga Co.	Ashi Str	Oshaku Shi	Tile & cement manuf't.	,, 5,000	—	118	—	27
Kinbasai Yojyo	Shiho	Fuhei Ki	Tile, brick manuf't.	,, 10,000	—	58	—	101
Zensei Go	Taitochin	Yokazen	Cement, tile manuf't.	,, 12,000	—	30	—	101
Seizan Renga Co.	,,	Soshingyo	Brick manuf't.	,, 6,000	—	—	—	83

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	No. of workers
						cub. tsubo		
Shokosho Hisho	Taiseichin	Ojin Kyo	Hides, etc., salting	S.Y. 50,000	—	75	—	11
Dowa Sei	,,	Butenkwai	,,	,, 100,000	—	78	—	24
Chinkisan	,,	Ryobonchin	,,	,, 85,000	—	54	—	13
Kotaiseigo	,,	Shyofukuko	Hides	,, 15,000	—	30	—	12
Fukujun Genki	,,	Toshikin	Tallow manuf't.	,, 1,000	—	18	—	5
To Jun Sei	,,	Kan Kei Tai	,,	,, 2,000	—	38	—	8
Fuku Jun Sei	,,	K Ei Kichiron	,,	,, 1,000	—	20	—	8
Toku Gen San	,,	So Rei Ho	,,	,, 2,000	—	40	—	23
Do Shyu Sei	,,	So Kichi Zo	,,	,, 1,000	—	24	—	9
Toku Ko Sei	,,	Uran Den	,,	,, 1,000	—	17	—	10
Bun Ko Go Mokko Co.	Taitochin	Shitsu Bunka	Wooden box manuf't.	,, 5,000	—	60	—	20
Chyu Wa Koshi	,,	Jyosei Shyo	Dyer	,, 2,000	—	60	—	16
Gen Yo Ko	,,	Yosei Kun	Strong sake manuf't.	,, 4,500	—	50	—	14
Gitai Shyo	,,	Gyu Sekichin	Sake	,, 4,000	—	10	—	9
Chyuka Waranawa Boshyoku Co.	,,	Chyo Chyu Tei	Straw rope	,, 1,000	—	20	—	9
Genki Hiryo Sezo Co.	Chyoan Str.	Kirin Fu	Soap	,, 1,000	—	80	—	11
Kashin Koshi	Soko	Shyu Gakuki	Cotton yarn	,, 2,000,000	—	4,670	—	15
Seiki Shin Ryuhin Seisaku Sho	Rison	Kinko Ichi	Willow wares (trunks, etc.)	,, 9,600	—	400	—	30

AMERICAN FACTORY IN TSINGTAU

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	Employees
Kaiji Yoko (Wm. Katz)	Yamato Str.	Wm. Katz	Refrigerator	$800,000	sq. tsubo 1,688		3 boilers	20

JAPANESE FACTORIES IN SHIHO AND RISON JURISDICTION

Name	Location	Proprietor	Industry	Capital	Area of site	Factory	Power	Employees
					sq. tsubo	cub. tsubo		
Naigai Men Kaisha	Shiho	The Co.	Cotton yarn	G.Y.16,000,000	34,870	6,372	600 H.P.	1,680
Takahashi Koppun Kojyo	,,	U. Takahashi	Bone power, oil	,, 200,000		400	—	25
Shiho Renga Seizo Co.	,,	M. Takehara	Bricks	S.Y. 2,000	3,200	48	—	30
Saihara Saiseien Co.	Kotoshi	K. Saihara	Salt refining	G.Y. 50,000	3,600	120	—	20
Taito Seien Co.	Kaihakuga Kou	Y. Shimizu	Salt refining, grinding, sake	,, 50,000	500	200	—	23
Santo Kogyo Co.	Soko	S. Tanaka	Cement	,, 1,000,000	6,676	1,320	350 H.P.	180
Fukuryu Match Co.	,,	The Co.	Matches	,, 500,000	2,500	428	—	120
Santo Yogyo Co.	,,	M. Ito	Fireproof earthen pipe, etc.	,, 500,000	13,519	420	12.5 H.P.	60
Yurin Yoko Saiseien Kojyo	,,	Y. Watanabe	Salt refining	,, 50,000	1,800	260	—	Jap. 4, Chi. 20
Towa Koshi Coke Seizo Co.	,,	S. Miyake	Coke	,, 100,000	8,864	906	8 H.P.	Jap. 6, Chi. 100
Santo Yofun Co.	Sashiko	T. Uesugi	Vegetable gelatine	S.Y. 2,000	100,000	170	—	64
Kozan Renga Co.	Kozan	U. Iwaki	Bricks	G.Y. 200,000	20,000	850	25 H.P.	100
Sareisho Renga Co.	Sareisho	,,	,,	S.Y. 100,000	10,000	230	—	70

CHINESE FACTORIES IN SHIHO AND RISON JURISDICTION

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	Employees
					Permitted to dig. tsubo	cub. tsubo		
Kotoshi Renga Co.	Kotoshi	Fu Hei Shyo	Tiles, bricks	S.Y. 10,000	150	—	—	38
Kashinboeki Co.	Soko	Shu Shu Shi	Cotton yarn	„ 1,200,000	49,430	3,985	800 H.P.	1,200
Kiryu Kojyo	Rison	Kin Ko Ichi	Willowware	„ 3,200	600	125	—	18

JAPANESE FACTORIES ALONG THE SHANTUNG RAILWAY LINE

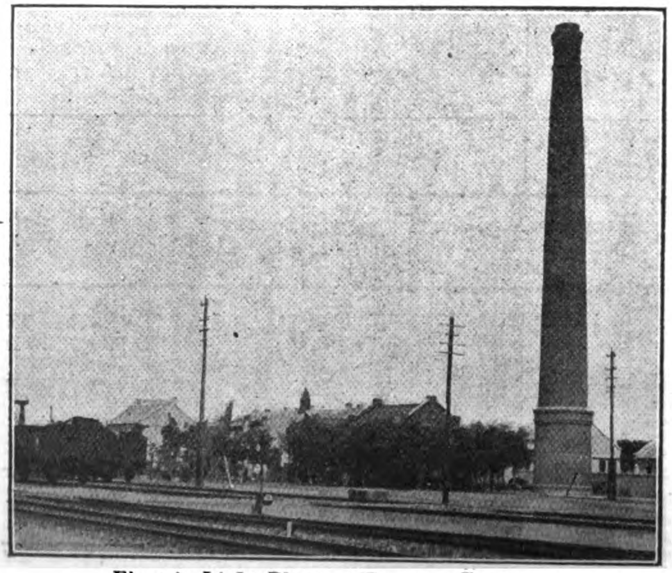
Name	Location	Proprietor	Kind of work	Capital	Space of site	Building area	Power	No. of workers
					sq. tsubo	cub. tsubo		
Seito Engyo Co. Nanwan Kagaku Kojyo	Nanwan	The Co.	Brine, soda industry	G.Y. 300,000	4,601	636	15 H.P.	Jap. 10 Chi. 80
Boshi Tanko Co.	Boshi	„	Coal mine	„ 3,000,000	1,500,000	620	160 „	720
Boshi-Higashi Tanko	„	Nikka Kogyo Co.	„	„ 500,000	21,463	510	120 „	586
Santo Koppun Co.	Chyoten	Y. Tamba	Bone powder	„ 100,000	400	80	—	17
Nisshikeitan Co.	„	The Co.	Egg products	Head Office furnishes	720	180	—	50
Seitoshishyo Branch	„	K. Suzuki	Cocoon dealer	„	1,000	182	—	40
Santo Menfun Co.	„	T. Fugisaki	Flour mill	G.Y. 67,000	160	40	20 H.P.	10
Kumegumi Kawara Co.	Nantei	The Co.	Bricks	S.Y. 2,000	200	40	—	40
Santokogyo Branch	Shisen	„	Lime	„ 6,000	87,000	40	—	21
Nikkayogyo Branch	„	„	Bricks	G.Y. 20,000	72,000	80	—	51
Toyo Boeki Co.	Hakusan	M. Wada	Dye sand	S.Y. 30,000	500	10	100 Pans	23
Towa Co., Coke, Factory	„	S. Miyake	Coke	Head Office furnishes	1,720	200	8 H.P.	63
Nikkayogyo Branch	„	The Co.	Fireproof earthen bricks, pipes, etc.	G.Y. 350.000	6,000	944	50 „	146
Chyuka Tanshyo	Sainan	The Co.	Egg products	G.Y. 1,000,000	2,190	917	110 H.P.	225
Taisei Co., Branch	„	„	„	Head Office furnishes	2,560	392	—	180
Toa Tanpun Branch	„	S. Tsuji	„	G.Y. 500,000	6,000	2,500	45 „	Jap. 12 and Chi. 65
Manshuseifun Branch	„	The Co.	Flour, cereals	„ 3,000,000	2.500	1,020	400 „	Jap. 15 and Chi. 65
Nanshyo Yoko	Iken	K. Suzuki	Dry cocoon, tobacco leaf	„ 10,000	—	150	—	21
Sakaguchi Yoko	Shyoraku	T. Ishibashi	Egg products, etc.	„ 500,000	—	50	—	10
Ando Yoko	Chyoten	G. Ando	Hides, etc.	„ 100,000	—	300	—	5
Rengaseizo Kojyo	Nantei	N. Tsuchiya	Bricks	S.Y. 5,000	—	—	—	70
„	„	Kumegumi Co.	„	„ 2,000	—	—	—	40

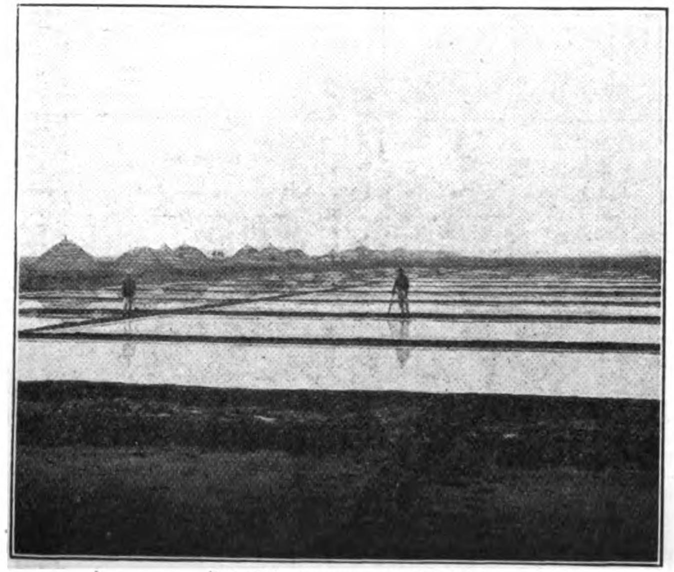
AMERICAN FACTORIES ALONG THE SHANTUNG RAILWAY LINE

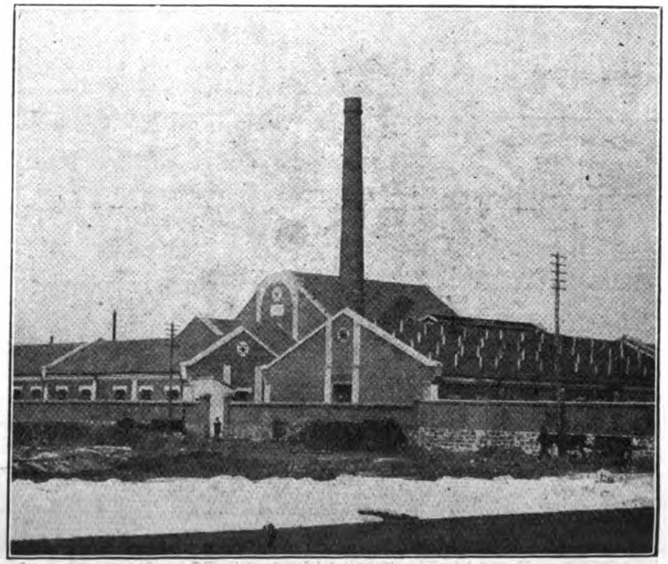
Name	Location	Proprietor	Kind of work	Capital	Space of site	Building area	Power	No. of workers
					sq. tsubo	cub. tsubo		
Nijuriho Eibei en koshi	(Ershili pu) Nijyuriho	B. A. T. New York, U.S.A.	Tobacco leaf buyers	—	29,600	10,000	2 Drying machines	American 20 & Chi. 90

CHINESE FACTORIES ALONG THE SHANTUNG RAILWAY LINE

Name	Location	Proprietor	Kind of work	Capital	Space of site	Building area	Power	No. of workers
					sq. tusbo	cub. tsubo		
Jin Waro	Hakusan	Risogyo	Thread glass	S.Y. 2,000	90	6C	—	12
Jinwa Sei	,,	Seki Gyoku Rin	,,	,, 2,500	60	50	—	18
Giwa Ko	,,	Kakugi San	,,	,, 32,000	120	40	—	22
Chyo Tai Ro	,,	Jyo Kei Ei	,,	,, 2,000	400	250	—	22
Taiwa Yo	,,	Ko Ko Tei	Chinaware	,, 30,000	200	40	—	60
Gyokusei Ko	,,	Chyo Roku	,,	,, 25,000	15 se	200	—	52
Ko Ko Ko	,,	O. Kan San	,,	,, 10,000	180 tsubo	100	—	34
					sq. tsubo			
Hakuko Shyo	,,	Okei Jyun	Iron work machinery	,, 20,000	40	29	—	80
Hakusan Dento Co.	,,	Su In Chin	Electric current	,, 500,000	570	173	150 H.P.	Jap. 2 and Chi. 11
Yukodo Yoshiki Seishi Co.	Shuson Sub'b	Rikei shyo	Silk filature	,, 300,000	18,700	293	100 machines	300
Do Ho Yoshiki Seishi Co.	Shuson Ins'd	Chyo Shi Gai	,,	,, 400,000	9,216	275	140 ,,	500
Ritaigo Shushyo	Jyorei	Yoshakurei	Sake	,, 1,000	—	69	—	13
Shyotaigo Shushyo	,,	O Shaku Ko	,,	,, 2,000	—	40	—	14
Hosei Go Yubo	,,	O Ishin	Bean oil extract	,, 1,000	—	28	—	8
Hoshin Koshyo	Ankyu Ken Denkashyo	Dengakukei	Colored chalk	,, 3,000	—	30	—	5
Tokusei Go	Hakusan	Okakan	Red dye sand	,, 1,600	—	180	—	6
Kaikichiro	,,	Okitei	Glass (pane)	,, 1,000	—	24	—	8
Jun ko Koki Menfun Co.	Saina	Chyoshakushaku	Flour mill	,, 15,000	—	—	—	—
Kojunfuku Kiki Menfun Co.	,,	Chyosaishin	Flour and oil mill	,, 130,000	—	—	—	—
Sainanshingyo Kashi Co.	,,	Soryo Hitsu	Matches	,, 250,000	—	—	—	—
Chyohoshyokusen Co.	,,	Chin Chyushyo	Blankets	,, 20,000	—	—	—	—
Taihoku Koshyo	,,	Bakeikai	Weaving	,, 4,000	—	—	—	—
Kayo Zoshikoshi	,,	Kashun Ko	Paper mill	,, 1,000,000	—	—	—	—
Kindan Taima Menshyo	,,	Yogen Ryu	Flour mill	,, 10,000	—	—	—	—


Electric Light Plant at Fangtze, Shantung


Salt Works near Tsingtau


Toa Egg Drying Co.'s Works, Tsinanfu

FAR EASTERN IRON AND STEEL

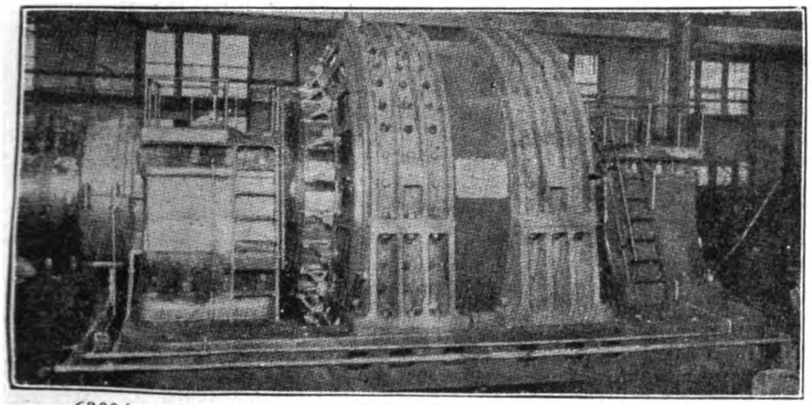
A bill with reference to the fundamental policy relative to the Japanese iron industry and shipbuilding, which had been studied and deliberated on by the government and the public for more than half a year, was approved on February 14, at an extraordinary general meeting of the Financial and Economic Research Society. Accordingly, Mr. Hara, the president of the Society, immediately took the necessary steps to submit a report to the government, the principal points of which are as follows :—

1. The fundamental policy for the development of the iron industry in Japan is self-supply, and, to achieve this end, the following measures are to be adopted :—First, a syndicate should be organized among the iron works with a view to distributing products and acquiring raw materials. Secondly, for the protection of the iron industry, 10 per cent. of *ad valorem* duty is to be imposed upon imported pig-iron, and 15 per cent. upon imported iron and steel, but steel for the use of shipbuilding is to be exempted from import duty. Thirdly iron and steel in the sphere of application of the conventional tariff is to be subsidized to the same amount as the tariff abovementioned as long as the conventional treaty exists. Fourthly, in case domestic steel be used in shipbuilding, a subsidy is to be granted based on import duty, and those who are carrying on iron industry are to be exempted from income-tax as well as business tax for ten years, and protection is to be extended to the electrical iron industry as well as to transportation by sea and land of materials for the iron industry. Moreover, the supply of raw materials for the iron industry is to be insured, an the iron industry carried on by Japanese in Manchuria and other places is to be protected to the extent that the iron industry at home will not be obstructed.

2. The fundamental policy in connection with shipbuilding in Japan lies in the attainment of self-sufficiency and, to accomplish this end, measures should be taken as follows :—First, general protection, namely, in view of inadequate methods in encouraging shipbuilding in the past, the import duty be waived in respect of steel and timbers to be used for the building and repair of vessels and also import duty be removed from newly invented articles and special articles such as equipments for vessels, etc. Secondly, government vessels as a principle be constructed at home dockyards and the law of navigation subsidy be continued in effect for the sake of encouragement and the import duty upon vessels be reserved subject to revision, and measures be taken facilitating the circulation of funds in abundance at low interest for long term loans, and a shipping laboratory be established. Thirdly, transports and other special shipping be subsidized in respect of the building expenditure and expenses for navigation.—*Exchange.*

* * *

NEW DIRECT-CURRENT REVERSING MOTOR FOR STEEL MILL DRIVE.—The motor illustrated below has recently been completed by the General Electric Company for the Tata Iron & Steel Company, Sakchi, India. It is a double unit machine rated 6,300 h.p., 80 r.p.m. with a speed range from 60 to 100 r.p.m. Speeds from 60 to 80 r.p.m. are secured by means of generator field control and from 80 to 120 r.p.m. by motor field



6300-h.p., 80 r.p.m., Direct-current Reversing Motor for Steel Mill Drive ; 22,000-h.p. Momentary

control. Power is supplied by a flywheel motor-generator set, consisting of a 6,500 h.p., 375 r.p.m. induction motor and two 2,500-kw. generators. The flywheel weighs 50 tons and the motor is normally operated non-reversing, but may be quickly stopped and reversed when necessary. The armature of the motor weighs 132 tons and was the heaviest crane lift on record in the shop in which it was built.

* * *

JAPAN'S IMPORTS FROM GREAT BRITAIN.—Discussing the iron and steel figures for December, 1920, a British analyst writes : Japan took 1,758 tons of plates not under ⅜-in., compared with 1,672 tons in December, 1919, while only taking 474 tons of plates under ⅛-in., as against 3,120 tons in 1919. In tinned plates and sheets China's import increased from 1,050 tons in December 1919, to 3,090 in 1920, but Japan's 1919 figure of 3,310 tons had shrunk to 28 tons. The export of textile machinery shows increases both to China and Japan, the former increasing its trade from 306 tons to 947 tons and the latter from 1,014 tons to 2,025. Japan's import of steel bars, angles, etc., decreased from 1,808 tons in December, 1919, to 969 in the corresponding month of 1920.

* * *

JAPANESE IMPORT DUTY RESENTED.—There is much opposition in Japan to the proposed import duty on iron. The protestants state that Japanese iron of to-day can by no means stand comparison with foreign iron in regard to output, quality and cost of production, and that it would be wiser to grant subsidies to the manufacturers than attempt an increase of the tariff.

* * *

PHILIPPINE OUTPUT.—The division of mines of the Philippine bureau of science has published statistics covering the mineral production of the Islands for the year 1919. The iron and iron ore figures are : Iron, 67 metric tons, P. 34,964; iron ore, 18,598 metric tons, P 92,990.

* * *

NEW CHINESE STEEL WORKS.—The military governor of Hupeh province, China, plans the erection of a large blast furnace at Huangshihkang port, on the Yangtze river, a few miles below Hankow and Hanyang. These furnaces are intended to handle ores of the Hsiang Pishan iron mines in the vicinity.

* * *

IRON AND COPPER WORKS, JAPAN.—The Nagashima Shoten Co., Ltd., was recently organized in Tokyo for the sale of iron, copper and other metals. The business representative is Mr. Riichiso Nagashima. Office: 12 Gensuke-cho, Shiba-ku, Tokyo.

* * *

NO JAPANESE "DUMPING."—Exporters who are primarily concerned with prospects in the Far Eastern markets and believed that Japan holds the key to that situation by resale activities, will be interested to note the following cable advices from commercial attache Abbott in Japan :—

"Though the Japanese pig iron market is dead," he states, "there seems to be no probability of any considerable dumping. Some exporting was done by a steamship company owning idle steamers and a surplus stock of pig iron. There is more or less continuous filtration of pig iron from Hanyeh-ping into the Pacific Coast. The factor involved is that of carriage, and depends upon transpacific tonnage rates competing with transcontinental rail rates in America."—New York *Journal of Commerce*, January 5.

* * *

INDIAN IRON ORE DISCOVERY.—The discovery of quantities of iron ore in South Singhbhum, India, has resulted in a number of applications for prospecting licences and mining leases, and an official examination shows that the most important iron deposit in the district is about three miles south-west of Gua, reaching about ten miles to the Kolhan-Keonjhar boundary east of Naogaon. Good quality ore is found in several other places in the vicinity and the Kolhan hematite usually contains 64 per cent. iron, with little phosphorus and sulphur. It is believed that the deposits in this district must total some millions of tons, but the chief disadvantage is the comparatively inaccessible nature of the country.—*Times Trade Supplement.*

* * *

Plans are reported to be afoot in Japan for amalgamating the iron and steel industries and making them self-supporting.

* * *

Through the prevailing gloom in the iron and steel trades comes a welcome ray of sunshine from Britain. After it had been closed for two years for reconstruction purposes, the first steel furnace of the North Eastern Steel Works has restarted work. It is understood that more furnaces will be starting shortly.

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

The Japanese Government Railway Program.—A new railway net program, announced by the government, extends over 6,000 miles, including lines already completed. It includes a new line from Hachioji, Tokyo prefecture, to Takasaki, Gumma prefecture, via Hanno, Saitama prefecture, and two new lines affecting Kanagawa prefecture. The last two comprise one from Osaki, near Tokyo to Matsuka, via Nagatsuda, and one from Yokosuka to Uraga.—Yokohama *Chamber of Commerce Journal.*

Dairen Imports Rails from U. S.—A cargo of one hundred pound rails for 30 miles, which the South Manchuria Railway Company ordered from the Carnegie Steel Works, has been landed at Dairen. The company intends to retrack the line with the heavier rails in place of the 60 or 80 pound rails now in use gradually, so as to enable the big locomotives to travel at their full speed.

Construction of the Changchow-Amoy Railway will be Resumed.—The gentry of Fukien province plan to resume construction and to complete the whole line of the Chongchow-Amoy Railway which was started twenty years ago. "The estimated cost is about $1,800,000, including expenses for erecting wharves, bridge-constructions and purchasing rolling-stock. The ministry of communications has approved the project and has donated $500,000 and will supply the balance in 8 per cent. Industrial Bonds issued by the ministry on the security of the surplus of profits on the Peking-Hankow Railway."—*Shun Pao.*

Loan Authorized for Indo-Chine Line.—The French chamber of deputies has passed a bill authorizing the government of Indio-China to issue a 6,000,000 piastres lottery loan, for the purpose of construction of the projected railway from the port of Dong-hoi (Annam) to Vinh-long (on the Mekong River, Lower Cochin-China). The bill is now before the senate.—French Wireless.

Bond Issue for Railway Construction, Japan.—The Japanese government is issuing ten million yen of Exchequer Bonds for railway construction and extension, expiring on June 1, 1925. The interest is five per cent.

Hsi-Kuang Plans.—The Chehkiang merchants plan to contruct the Hsi-Kuang railway so as to connect the two provinces of Chehkiang and Anhui in order to promote the silk and tea industries. The civil governor of Chehkiang (Shen Ching-chien) is to have a survey of the line made. The undertaking will cost about $3,000,000 which the Chehkiang merchants intend to subscribe.

Harbin - Blagoveschensk Line. — Manchurian merchants are raising $3,000,000 for the purpose of building a railway between Harbin and Blagoveschensk. They have requested the Chinese government to cancel the concession which was formerly granted to the Russo-Asiatic Bank. Details:—

(1) To nullify the railway agreement formerly concluded between the Chinese government and the Russo-Asiatic Bank with regard to the construction of the said Harbin-Heilungkiang Railway; (2) to issue Domestic Bonds to the extent of $6,000,000 to be shared equally by Fengtien, Heilungkiang and Kirin, for the establishment of the Harbin-Heilungkiang Bank; (3) to proceed with the preliminary construction work between Hulun and Hai Lan comprising an area of 200 *lis*, leaving the rest to be constructed at a future date when additional domestic bonds can be issued. Chinese press reports say that the Peking government approves this plan.

Pasha Extension of the S.-H.-N. Railway.—The Ningpo-Pasha branch of the Shanghai-Hangchow-Ningpo Railway 20 *li* further to Shar-poo is proposed. The plan of the Shanghai-Hangchow-Ningpo Railway board has been sanctioned by the ministry of communications.—*Shun Pao.*

New Japanese Railway.—Plans for building a railway between Matsumoto City and Kamitakara, Japan, a distance of forty miles, have materialised. After making a survey of the proposed permanent way, Mr. Isakai, engineer, has reached an understanding with the property owners.

Government Railway Line in Japan.—A government railway line between Hojo to Katsumura will probably be finished in 1926. The ten-mile construction between Hojo and Matsuda will be completed in April next. The line runs from Matsuda to Katsumara through Amatsu, Kominato and Chiba prefecture, a distance of 22 miles. The estimate for this line is Y.5,490,000.

Chinese General Wants to Build Railway.—General Feng Yu-hsiang has petitioned Peking to build a Yiencheng-Chowkou branch of the Peking-Hankow Railway in Honan. Yiencheng is situated on about the centre of that section of Peking-Hankow Railway traversing Honan, and the construction of an Yiencheng-Chowkou line is only to extend approximately 30 miles eastward from the trunk line.—*Sin Wan Pao.*

Perhaps, Perhaps Not!—Nearly half of the projected Chefoo-Weihsien line has been surveyed. It was recently planned to build a branch of this line from Dasintien to Tenchow, but as it would take too much time and expense to build this branch owing to the long distance through hilly countries, it is suggested that a trunk line should run from Weihsien via Wanghsien and Tengchow to Chefoo. This would shorten the way by nearly ten *li* less than it would take to build a branch.—*Sin Wan Pao.*

TRAMWAYS

New Japanese Tramway.—The construction of the new tram line in front of Tokyo Station, between Gofukubashi and Otamachi, has made considerable headway and will be opened early this month. The new service will be a great benefit to railroad passengers alighting at the station.

Electric Lines for Tokyo Suburb.—In view of the rapid increase of population in suburban district of Tokyo two new electric railway lines have been projected by influential business men. One of the projected lines will be laid between Nakashibuya and Otsuka, near Sugamo, its length extending for 10 miles. The other line will start at Shinjuku and reach the bank of the Tamagawa, the line covering 15 miles. Both lines will connect with the Yamate line of the government railway.

Osaka Suburban Electric Tramway.—At present electric tramways are running from Osaka City to Hanshin, Hankya, Hankai, Keihan, Taiki and Koya. A new suburban line will shortly be opened, probably in April, running between Umeda and Suida, under the management of the North Osaka Electric Tramway Co.

New Tramway Line, Saga.—Mr. Kixo Takashi, with some forty associates, plans to build a new tramway line in Saga prefecture, running between Isohayamachi an Ushizumachi, a distance of forty miles. The capital is Y.4,000,000, and permission is now being asked from the home department. An office will be opened at Isohayamachi, Saga, and a branch office at Tara Mura.

Amalgamation of Electric Tramway Companies in New Enterprise.—The Iyo Electric Tramcar Co. in Matsutama City, Yehime prefecture, will shortly amalgamate with the Innoshima and Kuse Electric Companies to supply electric power from Yehime prefecture to the mainland Sanyo-do across the Inland Sea.

The Shanghai Electric Construction Company, Limited.—With a view to bringing the capitalisation of the Company more nearly into accord with the value of its undertaking, the directors have decided to recommend the increase of the capital from £320,000 to £400,000 and the capitalisation of £80,000 of undivided profit by issuing as a bonus 8,000 fully paid shares of £10 each (giving one new share for every four shares now held). The new shares will not rank for dividends payable out of the profits of the year 1920.

Notices of meetings to consider the necessary resolutions will be issued in due course.

The directors have declared a second interim dividend of 6 per cent. (12/- per share) less income tax (payable on the 1st February) in respect of the year 1920. The final distribution which it is anticipated will be the same as last year will be announced in the usual course when the accounts for the year are ready for submission.

ELECTRIC LIGHTING, POWER, ETC.

Japanese Railway Electrification.—Investigation of hydro-electric possibilities is being made by engineers in Kanagawa, Shiguoka, Yamanashi, Nagano, Saitamo, Chiba, Ibaraki, Fukushima and Miyaji prefectures under the direction of the Japanese government board. This is in connection with the plans for the general electrification of the Japanese government railways. It is proposed to utilize possible power from the prefectures mentioned for the electrification of the Yokohama-Numatzu and Ofuna-Yakesuka railway lines, and also in the north-east neighborhood of Tokyo.

Osaka Electrical Estimates.—The preliminary estimates of Osaka's electrical department for the current year total Y.16,806,900, including Y.2,099,-400 for reconstruction and rolling-stock.

Ujikawa's New President.—Mr. Kiyoshi Kimura, a director of the Osaka Shosen Kaisha, has been elected president of the Ujikawa Electric Co., succeeding the late Mr. Ukagawa.

New Power House at Shakako.—The South Manchuria Railway Company's Electricity Works started in the spring of 1919 on a site near the Shakako Waterworks the construction of a new power house. The installation of the boilers and other machinery has been completed recently, leaving the motors the only items to be installed. According to the present plan, the management intends to conduct a trial operation early in September, so as to open the new power house to work from October 1.

Tateyama Electric Co., Ltd., Tokyo.—This company was organized recently for the sale of electrical machinery. They have a capital of $1,000,000, quarter paid up, and their managing director is Mr. Teijino Yamamoto. Address: 3 Itchome, Sakuma-cho, Shiba-ku, Tokyo.

Kyushu Amalgamation.—The Kyushu Hydro-electric and the Kakata Electric Company have

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discussed amalgamation for some time past. Besides these two companies, Kumamoto, Kagoshima, Miyazai Electric and several other electrical enterprises will be joined in this amalgamation, and a large concern organized with a capital of Y.200,000,000 in Kyushu.

Hydro-Amalgamation.—Permission has been given for the amalgamation of three Japanese firms, the Nihon Hydro-Electric, the Kiso Hydro-Electric, and Osaka Sogen.

Electric Machinery Co., Tokyo, Japan.—The Saito Electric Co., Ltd. has been recently organized in Tokyo to import and export electric machinery and tools. The capital of this company is Y.25,000, fully paid up, and the managing director, Mr. Tomekichi Saito. Address: 28 Shinbori-machi, Shiba-ku, Tokyo.

Electrical Industrial Co., Ltd., Tokyo.—The Taiyo Electrical Industrial Co., Ltd. was organized recently in Tokyo for the sale of electrical machinery and tools. This company has a capital of Y.100,000, quarter paid up, and their managing director is Mr. Soichiro Otsuka. Address: 74 Tanimachi, Ichigaya, Ushigome-ku, Tokyo.

New Electric Light Company, Soochow.—In the same way as the Peking Chinese Electric Light Power Company, the Soochow electric light company is now in serious trouble with its various clients and customers over the poorness of the light supplied by the company. On account of this, Mr. Liu and some wealthy Chinese merchants and officials have organized another electric light company to compete with the existing company and the latter is losing heavily. The management of the old company has approached the British consul-general in Shanghai for help because it owed a rather considerable sum of money to Jardine, Matheson & Co. for loans; but the local Chinese authorities will not interfere with the new company on the ground that the old company enjoys no exclusive rights.—*Asiatic News Agency.*

TELEPHONES, TELEGRAPHS, CABLES, WIRELESS

Wireless Plants, Japan.—A new wireless plant is nearing completion in Tomioka. Another plant is to be started near Osaka, this month, which will be operated in connection with the Tomioka plant.

Wireless Station, Otaru.—A wireless station is shortly to be installed at Otaru, at an estimated cost of Y.6,000,000. Major-General Kishimoto recently went up to Otaru, Hokkaida, to investigate and choose the site, 30,000 *tsubo*. It is hoped that building will be started some time in April.

Wireless for Osaka.—The Japanese government is establishing a wireless station in Osaka at an estimate of Y.200,000. The work of construction will be undertaken shortly.

Underground Telephone Installation, Yokohama.—Underground telephone installation was started on February 20 at Yokohama, from Choja-machi to Yamawaki-cho, a distance of 1,200 *ken*. This new enterprise is hoped to be finished in May.

PUBLIC WORKS

Hainan Island Development.—The civil administrator of Hainan is proposing the issue of domestic bonds to the amount of $2,000,000 for the development of the resources of the region.

Ten Million Pesos for Philippine Public Works.—The Philippine Congress has voted ten million pesos for public works.

PORT WORKS, HARBORS AND DOCKS

Opening Chinien as a Commercial Port.—Mr. Pan Fu, vice-minister of finance, submitted a memorandum to the Peking government, petitioning the opening of Chinien, Shantung, as a commercial port in conjunction with the opening of Lungkow port, Shantung.—*Shun Pao.*

Calcutta's New Dock.—The Duke of Connaught recently laid a commemoration stone on the site of the new King George Dock, Calcutta, which will berth 35 ships and will have a water area of 190 acres.

BRIDGES

Bridge at Kanda.—The building of the Hitokuboshi bridge at Kanda is nearing completion. This was started in August, last year, at an estimate of Y.100,000, and has been constructed in the old Japanese style with the old type of lantern. The foundations are of reinforced concrete.

Railway Bridge on Shanghai-Hangchow-Ningpo Line.—A bridge is being built across the Shouwu River within the Ningpo-Shoushing section on the Shanghai-Hangchow-Ningpo Railway.—*Sin Wan Pao.*

WATERWORKS

Waterworks, Tai Hu Lake.—The director-general of the Soochow waterworks requests the Peking government to approve the proposal that a loan of $400,000 be borrowed from the Chuang Yeh Bank in Peking with $1,000,000 government bonds pledged as security. The proceeds of the loan will be utilized to promote the waterworks of the Tai Hu Lake.

Tsinan Waterworks.—In Tsinanfu, capital of Shantung, no waterworks have been established since it was opened as a commercial port. Now many prominent personages of the city are planning to organize the Tsinan Waterworks as a joint stock enterprise of the provincial government and merchants of Shantung. The total capital, which will only be subscribed by Chinese (one-third by officials and two-thirds by merchants), will be $1,000,000 divided into 10,000 shares. Construction will start as soon as $300,000 capital is collected, and will operate over the whole area of the city.—*Sin Wan Pao.*

BUILDINGS

Extension of Fukien Arsenal.—The Fukien arsenal, which was placed under provincial control at the request of the late General Li Shun, will be extended during this year. An order for machinery able to turn out 600 machine-guns a year has been placed with the Shanghai arsenal. It is understood that the order will be filled and shipped to Fukien by the end of June.

Osaka's New Town Hall.—The new town hall which is being built at Nakanoshima at a cost of Y.3,600,000 will be completed in the middle of April.

New Police Station at Kita Shin-Machi.—The Haraniwa police station of Houjo-ku, Tokyo, has recently purchased 300 *tsubo* of land at Kita Shin-machi for their new building, and are starting to build.

New Building for Hankow Bund.—An imposing addition to the palatial blocks of buildings along the Hankow Bund will be the new building of the Chinese Maritime Customs House of Hankow, the erection of which will be proceeded with at an early date. The design of the new building, selected from a number of plans submitted, is by Mr. H. E. Stewardson and Mr. H. M. Spence, of the firm of Stewardson and Spence of Shanghai. They are the designers of the new Jardine, Matheson & Company buildings of Shanghai. The proposed new building, a four storey one, will be in the form of a hollow square with the principal facade surmounted by a clock tower, pillared and fretted and of an imposing and pleasing design. The dimensions of the new building are approximately 130 feet by 125 feet with a height of some 75 feet for the main building and 150 feet from the ground level to the summit of the clock tower. Reinforced concrete will be largely used in the construction, the three principal frontages being faced with grey Honan granite.

New Site for University, Tokyo.—The Tokyo Women's University president, Dr. Mitobe, has recently purchased 260,000 *tsubo* of land between Kishaji and Ogikubo, for the erection of a new building. It is hoped to start this in the autumn.

Loochoo Fortress.—The reconstruction of the fortresses at Uraga, Kata, Yura and Imahary is in progress, reports the *Jiji*, in accordance with the fortress reconstruction scheme passed by the Diet in the last session. The journal reports, further, that a new fortress will also be constructed in the Loochoo Islands, and another in the Bonin Islands, thus completing the first defensive lines on the Pacific. The preliminary land survey has been completed, and the work will be taken in hand early in April.

Peking Disapproves Harbor Scheme at Hsiaotsingho.—The scheme of constructing a harbor at the mouth of the Hsiaotsingho river by introducing capital from an American source, which is recommended by General Tsao Kun, may not be sanctioned by the Peking government, the government realizing great opposition to be raised by both foreigners and Chinese, as the project will affect Tientsin trade.—*Chinese Press Report.*

MINES, MINERALS AND METALS

Cobalt, Queensland.—The imperial mineral resources bureau has issued a statement relating to a cobalt deposit 19 miles south of Selwyn, in the Cloncurry district of Queensland. The chief ore-mineral is cobaltite, averaging 33 per cent. of cobalt and 40 per cent. of arsenic. A considerable amount of development has been done on the lode, and ore has been raised to the surface, averaging 10 to 25 per cent. cobalt. It is not stated whether this ore is being marketed or not; probably an outlet is being sought.

Siam.—The dredging property of the Renong Dredging Company on the western coast of Siam will be exhausted in two or three years. No. 1 dredge has sufficient ground to keep it employed for two years and No. 3 for about four years. No. 2 dredge has already been transferred to the new property at Rasa, in Selangor, and will commence operations there by the end of the current year. Nos. 1 and 3 will follow it when their work is completed at Ronong. Some particulars of the Rasa property were given in the February issue.

India.—The Nundydroog Company is to be reconstructed, and new capital raised, in order that development shall be continued at depth. The present equipment is only capable of dealing with operations to 4,000-ft. in depth on the incline. In order to provide facilities for deeper working, a circular shaft was commenced some time ago, and it still requires to be finished. Mr. C. H. Richards, the superintendent, mentions the necessity of sinking two other vertical shafts. Before these three shafts come into operation, development below 4,000-ft. will be done by means of main winzes. The directors ask for £170,000, and the proposal is to reconstruct the company with a liability of 6s. per 10s. share. The developments in depth are sufficiently good to warrant the expectation that the mine will continue to yield profitable ore. The Ooregum, to the south, contains profitable ore at a considerably greater depth, and recently the Balaghat, to the north, has developed rich ore in depth near the Nundydroog boundary.

The yearly report of the North Anantapur gold mine shows that the directors and managers

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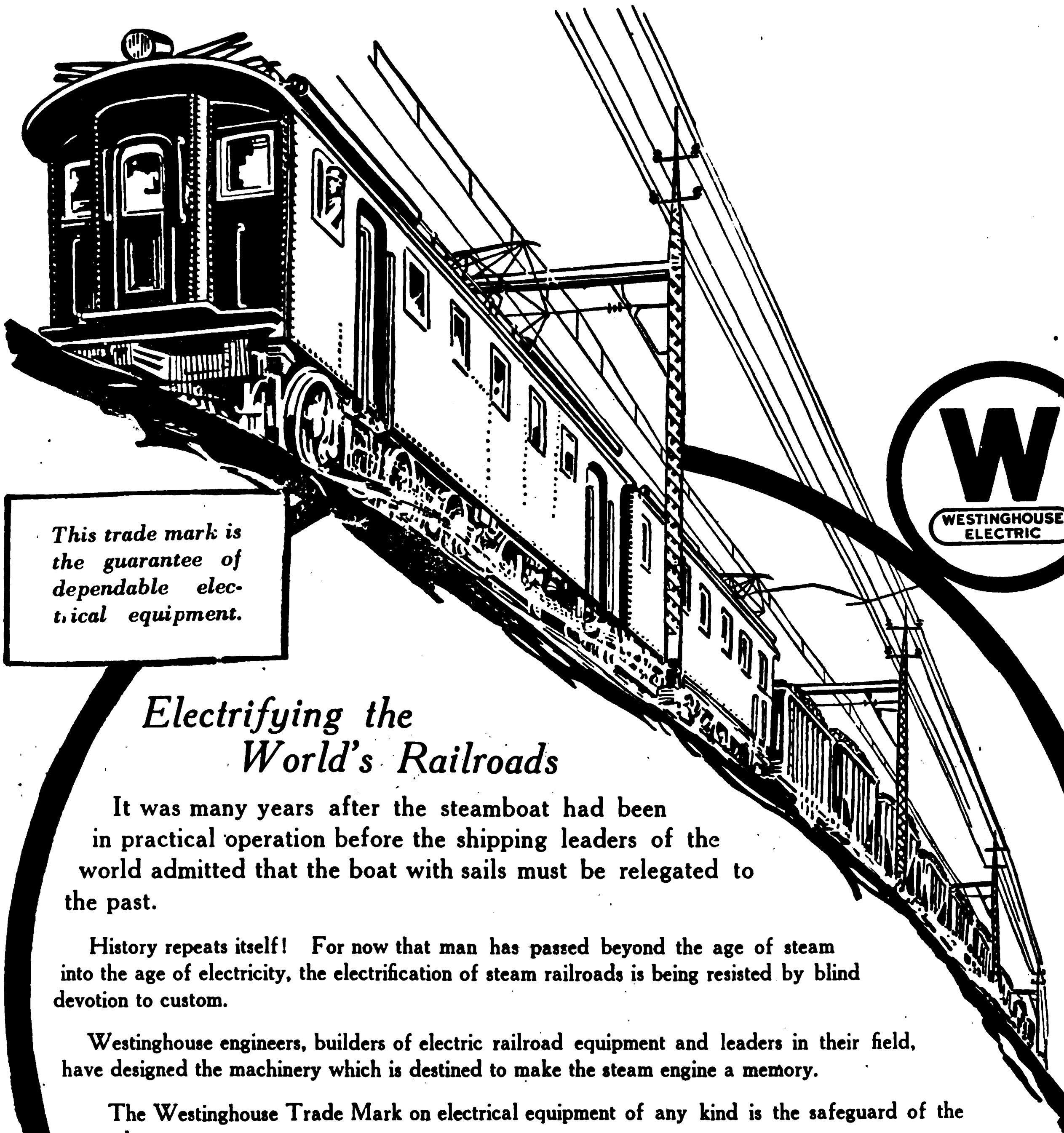

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have little hope of further discoveries of payable ore, and the operations will not be continued much longer. As regards other properties, the first copper prospect examined has proved disappointing, but another, also in Chota Nagpur, is affording much better hopes of success.

Japan's Mineral Output.—The output of leading mines throughout Japan for last October was 174,030 *momme* of gold, 3,528,204 *momme* of silver, 1,152,505 *kin* of copper, 5,405 tons of iron, 1,977,107 tons of coal, 161,802 *koku* of petroleum oil and 2,334 tons of sulphur. Compared with the result for the same period of last year gold production shows an increase of 5.3 per cent. but all other minerals show a general decrease, silver decreasing 2.0 per cent., copper 15.3 per cent,, iron 25.9 per cent., coal 15.2 per cent., petroleum oil 4.0 per cent., and sulphur 49.1 per cent.

Phosphorus in Paracele Island.—Mr. S. Hirata, when he was travelling through Paracele Island, discovered phosphorus, and, as a result of this, the Nihon Chemistry Manure Co., the Dai Nippon Manure Co., and the Kanto Oxygen Co., have established the Jirata Phosphorus Mining Co., with a capital of Y.1,000,000. It is rumored that the amount of phosphorus on the island is about 10,000,000 tons, and assays at thirty-two per cent. The shares are Y.25 each, and it is hoped to complete the first payment within the year. The Taiwan government will help in this.

China's Metal Imports.—The value of China's metal imports was $76,931,631 in 1919, as compared with $21,619,174 in 1913. The advance in value coincides with an equal advance in quantity. Copper ingots were imported in very much larger quantities than ever before and the value was more than 100 times as great as in 1913. The copper imported is used almost exclusively by the mints. Manufactured iron shows considerable gains. There was a large increase in the importations of tin in slabs. This is a product of the Kwangsi mines, and is reimported from Hongkong after having been exported there from China.

Ochanomizu, Museum, Tokyo.—A mining exhibition will be held, with the help of the education department, in Tokyo, from March 21. When the list was closed (January 20) 169 firms had entered, and over 12,000 exhibits were pledged. The exhibition will be divided into mining history, mining products, mining improvements, mining art and progress. The chief exhibitors will be the Tokyo and Osaka arsenals, naval arsenal, fishery institute, imperial museum, north-east imperial university, Tokyo art school, Akita mining school, Mitsui Mining Co., Japan Petroleum Co., Mitsubishi Industry Co., Takato & Co., Okura Industry Co., South Manchuria Railway, Oki Electric Co., Asanuma & Co., and Matsuzaka-yu Co.

Queensland Buys Yampi Mineral Rights.—The Queensland government proposes to proceed with the state iron and steel works project in purchasing mineral rights to Cockatoo Island, Yampi Sound, Western Australia. The minister of mines declares that the manufacture of steel from such rich ore as found at Yampi Sound would be extremely easy.

Metal in Soviet Russia.—Metal industry in Soviet Russia will enjoy better conditions than in previous years. Besides 77 furnaces and 69 Marten's furnaces, 32 more will be built.—*Exchange.*

Phosphorus Mining Near Lasa Island.—A rich phosphorus mine has been discovered on an island near Lasa, and after investigation and examination the results are favorable. Mining will be started very shortly.

Japanese Oil-fields.—A syndicate has been formed for the exploitation of the North Saghalien oil-fields, comprising the well-known companies Mitsui, Kuhara, Oitsubishi, Fugita and Sumitomo. Capital, Y.100,000,000.

Standard Oil in the P.I.—To relieve the pressure on its California supplies made by its Oriental trade, the Standard Oil Company has made plans for drilling operations on the Bondog Peninsula, Island of Luzon, Philippines. A party of drillers, says "The New York Herald," with full equipment for wildcatting, including tools, boilers, lumber, etc., has arrived at Bondog with a thousand tons of drilling machinery, the work to be done by the Richmond Petroleum Company, the subsidiary which has been doing the Standard's wildcat work in New Mexico and Colorado.

If the Standard of California is successful in developing oil in the Philippines in quantities sufficient to make the exploit commercially successful, it will be the only American company producing oil in the Orient. The old Standard Oil Company of New Jersey prior to the dissolution of the trust drilled in Japan, but subsequently sold all of its holdings to the Nippon Oil Company, withdrawing entirely from the Japanese empire. The Standard of New York some years ago drilled wildcat wells in China, but failed to get oil in commercial quantities and besides was unable to get a satisfactory permanent concession.

Plans which depend upon the outcome of the drilling operations include the erection of a refinery, probably at Manila, where it will be the closest one to the Chinese market, with the exception of those in Japan. It will also be closer to Australia and New Zealand.

It is the intention to construct roads in the Philippines. The Bondog Peninsula is a virtual jungle, with no roads except native carabao trails, and no equipment can be moved inland until roads have been built. There is no harbor and all supplies will have to be transferred by lighters from the steamer as it lies at the mouth of the Pagsanghan River.

INDUSTRIES

Shanghai Sugar Refinery.—The Cantonese sugar merchant, M. Y. San, has established a sugar refinery in Shanghai for the improvement of the Chinese sugar trade with foreign countries and, at his request, the Peking government has agreed

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Coal and Cement Works, Osaka.—The Hanabatake Shoten Co., Ltd., has been organized for the sale of coal and cement, and building materials. The business representative for these works is Mr. Zenzo Hanabatake. Address: 1 Nichome Higashi, Ichinimachi, Sakai city, Osaka.

Lumber Factory, Tokyo.—The Taiyo Lumber Co., Ltd., was organized recently at Tokyo for the sale of lumber and wood. This company has a capital of Y300,000, quarter paid up, and the managing director is Mr. J. Hashino. Office: 16 Sanchome, Honkaku-cho, Nihombashi-ku, Tokyo.

Factory for the Sale of Shipbuilding and Mining Materials, Tokyo.—The Omura Shoten Co., Ltd., was organized recently for the sale of shipbuilding and mining materials. This firm has a capital of Y.500,000, fully paid up. Their managing director is Mr. Oj. Omura, and the address of their office is 10 Itchome, Higoshi Minati-cho, Kyobashi-ku, Tokyo.

Bicycle Factory, Tokyo.—A limited company, Maito & Co., was organized recently in Tokyo for the sale of bicycles and their accessories. The representative of this firm is Mr. T. Irihara. Office: 52 Kikugawa-cho, Houjo-ku, Tokyo.

Tanaka Trading Company, Ltd., Tokyo.—This company was recently organized for the sale of coal and lumber. The representative of this firm is Mr. S. Tanaka, and their office is: 11 Aioi-cho, Kanda-ku, Tokyo.

Mining Works, Tokyo.—The Japan Colonial Industrial Co., Ltd. was organized recently for the sale of mining materials. This has a capital of Y.50,000, quarter paid up, and the manager is Mr. S. Yamaguchi. Their office is: 28 Yedogawa-chom Kaishi Kawa-ku, Tokyo.

Nail Factory Started at Osaka.—The Hagiwara Shokai Co., Ltd. was organized recently for the sale and manufacture of all kinds of nails. Their representative is Mr. O. Hagiwara, and the office address is: 697 Kizu, Imamiya-cho, Osaka-fu.

Stone Works, Tokyo.—The Naikaku Industrial Stone Co., Ltd., was recently organized in Tokyo. This company has a capital of T.2,000,000, quarter paid up, and is for the sale of stone of all kinds. The managing director is Mr. Seiryo Awazu. Office: 25 Yoshino-cho, Asakusaku, Tokyo.

Coal and Coke Factory, Tokyo.—The Tsukatani Coke Factory, Ltd., has been organized recently in Tokyo for the manufacture of coke, and to sell coke and coal. Their representative is Mr. Fukui-shino Tsukatani. Office: 141 Ogimachi, Fukagawa-ku, Tokyo.

Briquette Factory at Karatsu, Kyushu.—The Mitsubishi Mining Co., of Karatsu, Kyushu, are organizing a briquette factory. They will have an annual output of about 2,000,000 tons a year, and machinery has already been ordered from Great Britain. As soon as the machinery arrives, the manufactory will start work at once.

Stone Works at Kumamoto.—Haraishi Yama, Amakusagun-Kumamoto, is famous for its stone used generally in Japan for the building of harbors, and sea-walls. Recently some of the leading men of Kumamoto organized a company for the sale of this stone. The company has a capital of Y.300,000 and the managing director and president is Mr. Kamskachiro Nakanishi.

Cotton Cultivation by the Oriental Company.—The Oriental Colonial Co. has a plan to cultivate cotton in China. Recently they purchase land of 5,000 *tsubo* for this purpose in the neighborhood of Santo Railway, and cultivation of cotton will start in the coming May.

Asano Cement Manufacturing Co.—This company has factories at Kawasaki and Hakodate, Hakkaido. It has produced 500,000 casks monthly, but, on account of slackness in trade in Japan, they have been exporting to India and China since last year, with good results, so that this exporting will continue.

Glass Works, Japan.—The Takinami Glass Works, Ltd., has recently been organized in Tokyo for the sale and manufacture of glass ware, etc. The managing director is Mr. S. Sasaki. Address: 57 Itchome, Taihei-cho, Houjo-ku, Tokyo.

Cigar Box Possibilities in the P.I.—Information received by the foreign trade department of the San Francisco chamber of commerce from the bureau of commerce and industry of Manila points out that the cigar box industry in the Philippines would be given impetus if a big demand in the United States would be created among cigar dealers and manufacturers.

"There is an abundant supply of Calantas wood here which is specially suitable for the manufacture of cigar boxes," the communication says.

"It is estimated that an investment of $75,000 would put up and operate a factory with a capacity of 1,000,000 boxes a month. It is further estimated that 100 boxes unnailed could be manufactured here for $10.50 or for a lower amount."

American Trade in the D.E.I.—Vice-Consul Horace Remillard, in his report on the Dutch East Indies, says "there are two factors which appear vital, if the United States is to hold its present position, especially in the import trade of the Dutch East Indies. Longer credits and more liberal terms must be accorded local buyers. Irrevocable credit was required during the war in anticipation of the sharp decline in the price of manufactured articles, sure to follow the cessation of hostilities. Now, this circumstance no longer exists, and German, British, and Dutch competition is in the field with most tempting offers, based on a wider and freer credit.

The bulk of the American trade with the Dutch East Indies during the last few years is the result of enforced circumstances resulting from the war; the United States was one of the few countries capable of either receiving or supplying merchandise. If the trade acquired is to be conserved, large American importing concerns, preferably working in conjunction with Dutch capital, should be established rather than represented in the Dutch East Indies. It is believed that various American manufacturers could combine to work in common, pool expenses, and open offices in the colony. At present a large part of the American effort is in long-range correspondence, which is slow and unsatisfactory.

Practically all other countries, even those European nations with comparatively smaller interests, are all represented by large importing and exporting companies which are in direct touch with the consumers. It is also worthy of note that with the exception of rubber, there are practically no large American plantation investments in the colony, although the substantial returns of recent years would appear to warrant such investment. Two of the most encouraging features of 1918 have been the opening of two American banks in Batavia and Soerabaya, and the practical assurance of direct and regular steamer connection between the Dutch East Indian Archipelago and the United States under the American flag.

AIRCRAFT

Organization of Aviation Bureau.—The Peking government has approved the plan submitted by the chief of the aviation department to the effect that an aviation bureau be organized.

Aeroplanes at Nogoya.—The branch works of the Aichi Tokei Company, Nogoya, started to make aeroplanes some time ago, and recently completed one that was tried by the Yokosukei Naval Aviation School. This proved so satisfactory that the Aviation Corporation ordered two more from this factory, which are now in course of construction.

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ROADS

Shanghai-Wusieh.—Plans for the road from Shanghai to Wusieh are under way. A survey will be made and the road routed so that it will run between the railroad and the seacoast touching important inland cities that need a means of communication with a port. It will not parallel the railways or waterways but will open new territory to better commerce.

Peking-Tsinan Main Road.—Survey is being undertaken for the building of a main road from Peking to Tsinan via Sinchen, Yunghsien, Yungchen and Zenchiu, and practical work is expected to start this month.—*Sin Wan Pao.*

Peking Roads to be Improved.—Minister Chang Chih-tan who is also director-general of the metropolitan municipal council has decided to improve the roads of Peking. The first step will be to make all the main streets five feet wider, and have the drains covered.

Nantungchow Road.—An extensive scheme of building roads running through all the twenty-one districts of Nantungchow is in progression. The scheme is to build three main roads and five branch roads to a total length of about two hundred miles, each to be macadamized and thirty Chinese feet wide. To meet the cost of this the local authorities will appropriate $300,000 every year from the fund assigned to the Nantungchow river works by the road construction bureau for a term of ten years. It will take about six hours only for a passenger to travel round the whole Nantungchow city when the work is completed.—*Shun Pao.*

MOTORS

Tsaikowfu-Urga Motor Transport Service.—A joint board of the ministry of communications and the Peking-Suiyuan Railway has drawn up a plan for the reorganization of the motor-transport between the Peking-Suiyuan R.R. rail-head and Urga. Fifty-seven Italian Fiat motortrucks have been ordered for the service, twenty of which have already arrived in China. The rail terminus of the service is to be at Tsaikowfu rather than at Kalgan, in order to avoid the difficult ascent of Hunabar Pass.

American Cars in the Far East.—Despite the assertion that the Far East has not yet reached a stage in its highway construction to render it an especially attractive field for the automobile, either for passenger or commercial purposes, American exports of this class to the region are large and rapidly growing. To India, the total for the fiscal year 1920 was, in round terms, 8,000 cars, valued at over $8,000,000, and to Dutch East Indies about 1,600 cars, valued at approximately $2,000,000; to Japan nearly 3,000 cars, valued at 2½ million dollars, and to the Philippines, 2,000 cars, valued at approximately $2,000,000. These figures relate to passenger cars, while the freight automobiles sent to China, the Dutch East Indies, Japan and Philippines in 1920 aggregated about $3,000,000 in value. Of rubber tires for automobiles, the exports to China, Japan, India, Straits Settlements and Dutch East Indies in 1920 aggregated about $5,000,000 in value.—*The World's Salesman.*

GOVERNMENT FINANCE

Hainan Bonds.—The civil administrator of Hainan is proposing the issue of domestic bonds to the amount of $2,000,000 for the development of the resources of the region.

Canton Loan ?—The Canton provincial assembly has passed a bill authorizing the issue of a domestic loan of $5,000,000 for reconstruction purposes. The Provincial Bank of Kwangtung is undertaking to float the bonds.

Japan's Specie Holdings.—Japan's specie holdings at the end of January stood at 2,183 million yen, a gain of 4 million yen as against January 15. The species held by the government amounted to 872 million yen, a decrease of 12 million yen and that held by the Bank of Japan to 1,311 million yen, an increase of 16 million yen. The total amount retained at home stood at 1,137 and that retained abroad 1,046 million, the former showing an increase of 16 million yen and the latter a decline of 12 million yen.

Loan of $4,000,000 for C.E.R.—General Sung Hsiao-lien, director-general of the Chinese Eastern Railway, is obliged to approach a foreign party for a loan of $4,000,000 in order to enable the railway administration to tide over the financial difficulties of the coming year. Recently, a loan of $2,000,000 was borrowed by the Chinese Eastern Railway from a foreign source. But the amount was so insignificant that it only served the turn of the railway administration for a very short time. The present loan will be utilized to defray the heavy coal expenditures, outstanding police charges, and repairs to workshops of the line in question. A premium of ninety-eight per every hundred is observed and interest is charged at the rate of 8 per cent. per month. It is reported that the loan will be advanced on the 10th instant.—*The Peking Leader.*

BANKS

Pacific Trading Commercial Bank.—Minister Chow Tsu-chi of finance is reported to be organizing a Pacific Trading and Commercial Bank with certain American capitalists with capital of gold $5,000,000. Eleven directors will be appointed consisting of six Chinese and five Americans. A president and a vice-president will also be appointed, one Chinese and one American. Business will be transacted in Tientsin, Shanghai, New York, California and other places.—*Chinese Exchange.*

New Irving Bank Director.—At the annual meeting of the stockholders of the Irving National Bank of New York, January 11, James Clarke retired as a director and Hubert T. Parson, president of the F. W. Woolworth Company, was added to the board.

Japanese Amalgamation.—The Buzan Bank and the Yokohama Jitsugyo Bank have been amalgamated, and the capital increased to Y.6,000,000. The bank will be known in future as the Shinyu Zinko, and the president will be Mr. M. Kaneko, and the managing director is Mr. T. Funatsu.

COMMERCIAL FINANCE

Japanese Clearing House Returns.—Bills cleared at the Tokyo and Osaka clearing houses during January reached 737,298 valued at 2,013,372,000 yen and 498,619 valued at 1,446,433,932 yen respectively. Compared with the preceding month, those cleared at the Tokyo clearing house represent a decrease of 373,650 in number of bills and of 827,691,000 yen in value, while those cleared at the Osaka clearing house also indicate a decline of 230,660 in number of bills and of 56,408,619 yen in value.

Chinese Stock Exchange at Tientsin.—Pien Yin-chang, chairman of the Chinese general chamber of commerce in Tientsin, in conjunction with other prominent Chinese merchants and capitalists, has established a Chinese stock exchange in the native city dealing in cotton, cotton yarn, furs, hides and foodstuffs. Authority for this step has yet to be secured from Peking.

Japanese Enterprises for 1920.—The capital of the new and extended enterprises in Japan during 1920 amounted to over 6,671,200,000 yen, being an increase of over 2,369,660,000 yen, compared with 1919. The new enterprises were capitalised at over 4,071,230,000 yen, or 1,304,780,000 yen more than in 1919, and old enterprises expanded by over 2,599,970,000 yen, or 1,064,870,000 yen more than in 1919.

Company Amalgamation.—It has been decided to amalgamate the Ishibashi Land and Building Co., Ltd. (capital Y.1,200,000), the Banto Land Company (capital Y.10,000,000) and the Nippon Muki-jo Electric Co., Ltd. (capital Y.4,000,000) with the Takehara Imperial Land Trust Co. The new company is to be called the Nippon Land and Trust Company.

Izu Sea Product Company, Ltd.—Izu Sea Product Company Ltd., organized under above name recently, with a capital of Y.300,000, quarter paid up, for general fishery. Office: 10 Sanchome, Sanjikkeu, bori, Kyobashu-ku, Tokyo. Managing director, K. Yiura.

Horaki Coal Mine Co., Ltd.—A meeting of shareholders of this company was held recently to decide the dividend of 12 per cent. profit, and to choose three new directors.

Kaikoku Fishery Co., Ltd.—This company has been organized for deep sea fishing. Office: 25 Shimmei-cho, Shiba-ku, Tokyo. Representative: I. Kawasada.

New Fishery Company, Hokkaido, Japan.—A partnership fishery company, Kodama Shoten, has been recently organized at Hokkaido. Office: 21 Houi-Minato-cho, Kyabushi-ku, Tokyo. Branch: 3 Akebono-Cho, Hakodate, Hokkaido. Representative: T. Kodama.

SHIPBUILDING

Thornycroft Cargo Steamer.—Good progress in mercantile ship construction continues to be made at the Southampton Works of John I. Thornycroft & Co., Ltd., where their fourth cargo steamer during the last half-year of 1920 was launched on December 22. This latest vessel is a steel single-screw cargo steamer to carry 500/550 tons D.W. which has been built to the smallest of the three standard designs of mercantile vessels Thornycrofts are now constructing at their shipyard to carry 4,300, 2,000 and 550 tons respectively.

The dimensions of the boat are as follows:

Length O. A.	162'0"
Length B. P.	155'0"
Breadth Mld.	26'0"
Depth Mld.	12'6"
Draft loaded	12'0"
I. H. P.	500
Speed	9½ knots.

General Description: The materials and construction are of scantlings and quality to meet Lloyd's requirements of Class 100 A. 1. The vessel has a top gallant forecastle right forward, a short bridge amidships, and a raised quarter deck extending from the bridge to the stern. Accommodation for the ship's officers is arranged under the bridge deck, for engineers in a deck house aft and for the crew in the forecastle. Chart room is arranged on bridge deck with pilot bridge over. There are two cargo holds, separated by a non-watertight steel bulkhead and two masts fitted with cargo derricks and suitable steam winches. Three watertight bulkheads are fitted, one at each end of the machinery space and one at fore end of cargo space. The coal bunkers have a capacity for about 55 tons of coal. Bulwarks are of steel plate fitted with bulb angle rail and provided with freeing ports of ample size. Cargo hatches have steel coamings about 30 inches high in the well, and 24 inches high on the raised quarter deck. The decks to bridges and forecastle are of pine. A combined steam and hand steering gear is fitted on the navigating bridge. The general outfit includes anchors, cables, hawsers, steam windlass, boats, davits, accommodation ladder, galley, etc., as is usual for this class of vessel. The propelling machinery is placed at aft end of the vessel. *Engines.*—The main engines are of triple-expansion type with diameters of 13½-in. H.P., 22-in. I.P. and 35-in. L.P. by 27-in. stroke. The working pressure is 180-lbs. per square inch giving 500 I.H.P. at 120 revolutions per minute. The cooling surface of the condenser is 610 square feet. One return tube type boiler is installed, with Howden's forced draught, size 11-ft. 6-in. in length by 13-ft. dia-

meter with a heating surface of 1,832 square feet and a grate area of 51½-in. sq. ft. The propeller shafting is of steel carrying a four-bladed propeller of cast iron and the stern tube is of cast iron with brass bushes lined lignum vitae. The following auxiliary machinery is installed :—Circulating water pump, auxiliary feed pump, bilge general service and sanitary pump.

New Engineering & Shipping Works Record, 1920.—During the year these completed and delivered four 2,000-ton steamers, four steel pontoons, two oil barges, three towboats and three motor launches, and also a floating sheerlegs for the use of the works. They also launched a twin-screw lights tender for the Chinese customs, which has since been delivered, and have in addition carried out an exceptionally large amount of repair work and overhauls of vessels. At the moment the works have a considerable amount of tonnage in course of construction, including ocean-going and shallow draft river steamers and other smaller craft.

New Engineering Plant at Ichang.—In his speech to the shareholders of the New Engineering & Shipbuilding Works on the occasion of the recent annual meeting the Company, the Chairman said: "As you are no doubt aware, the navigation of the Upper Yangtze from Ichang to Chungking has rapidly been extending, and there will shortly be at least a dozen steamers plying on the Upper River. These steamers, owing to the danger of navigation on the Upper River, are frequently in urgent need of repairs, which they cannot obtain on the spot, and consequently have for minor repairs to come down to Hankow, or for larger repairs to Shanghai. This naturally involves a great loss of time and consequently also of revenue to the owners, as it means that they consequently lose the greater part of the high water season, which is the time in which they are able to earn money, as during the winter months the navigation of the Upper River cannot be maintained.

"It is therefore obvious that such vessels would be only too willing to pay adequate prices if they could get the necessary repairs undertaken on the spot, and thus not have to lose the greater part of season. We have consequently been approached as to whether we could not see our way to erect subsidiary works in Ichang, and after having received a satisfactory report from one of our engineers, whom we sent up to Ichang to inspect, we purchased what seemed to us to be the most suitable site. As soon as the river had fallen to the lowest point, we requested Major Logan, of Messrs. Palmer and Turner, who has had considerable experience in construction work, to proceed to Ichang in order to make an inspection on the spot and report to us as to the feasibility of the scheme which we had in view, and I am glad to be able to tell you that the report we have just received from him on his return from Ichang is of a promising nature and is now having our further consideration."

New Customs Steamer.—The Chinese customs str. *Chiang Lung* was recently put through her trial trip by the New Engineering & Shipbuilding Works.

The *Chiang Lung* is built for service as a lights tender on the lower Yangtze, her dimensions being 126-ft. 6-in. over all by 21-ft. by 9-ft. She is fitted with twin-screw, triple-expansion condensing machinery and single-ended return tube boiler by the builders.

Italian River Gunboat.—A very successful launch took place on February 27 from the Pootung shipyard of the Shanghai Dock & Engineering Co., Ld., of the river gunboat *Ermanno Carlotto*, built to the order of the Italian government.

The *Ermanno Carlotto* has been designed and built by the Dock Company for service on the Yangtze and Chungking rapids and is the result of their extensive experience of this special type of gunboat for the service intended. The hull plating from the waterline up, also the complete superstructure and houses, are built entirely of special bullet-proof plating. The vessel measures 160 feet in length between perpendiculars by 24-ft. 6-in. in moulded breadth, and is fitted with two independent sets of triple-expansion, surface-condensing engines built by the Dock Company, while steam is generated in two large water-tube boilers of the "Yarrow" type.

The auxiliary machinery includes independent circulating pumps, Weir's type feed pumps, fire and bilge pumps, evaporating and distilling plant, two oil-driven generating sets for electric lighting and fans, steam capstan forward and capstan aft, steam steering gear and the usual other fittings.

Amalgamation of Japanese Dockyards.—It has been decided to amalgamate the Toba and Harima dockyards of Teiko-ku Kisen Kaisha with the Kobe Steel Works. Negotiations as to price are still proceeding, but it will probably be about Y.5,000,000. When this amalgamation takes place, Toba and Harima Dockyards will be the only shipbuilding factory belonging to the Kobe Steel Works, and the Taikoku Kisen will be the only steamship company. In the future, it is anticipated that Tabo Dock will take charge of the repairing of battle and steamships, and the Harima Dock will take orders for the building of small type boats.

Japan's Shipbuilding.—Owing to the slackness in shipbuilding orders at present, the discharge of dockyard workmen is to be anticipated. The following table shows the ships over 1,000 tons that are at present being built :—

Mitsubishi Dock, Kobe ...	3
Nagasaki	3 and 1 battle cruiser
Kawasaki Dock... ...	5 and 1 cruiser
Uraga Dock	4 and 1 torpedo
Yokohama Dock ...	4, 1 of special service
Asano Dock	3, and 1 of special service
Osaka Iron Works, Osaka	4, and 2 of special service
Innoshima	3
Mitsui Bussan Dock ...	2
Teikoku S.S. Dock, Toba	1
Harima	1
Aizawa Dock	2

Besides the above, Hakodate Dock, Ishikawajima Dock, Uchida Dock, Nitta Dock, Ono Ironworks Dock, Okamoto Dock, Tochigi Dock, Matsuo Dock, Fujinagata Dock, and Hasada Dock are each building one.

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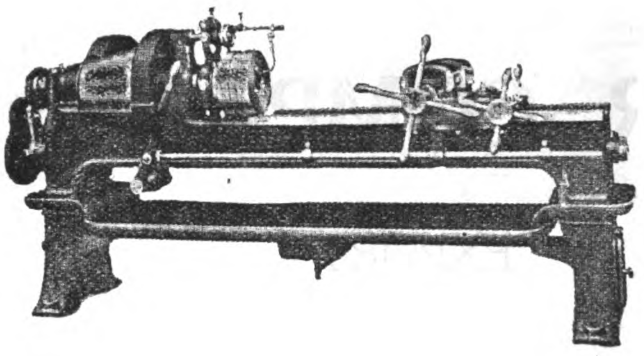

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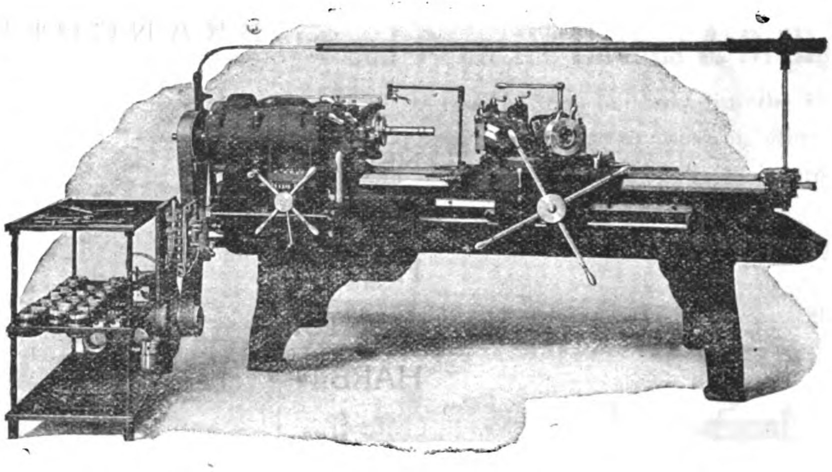

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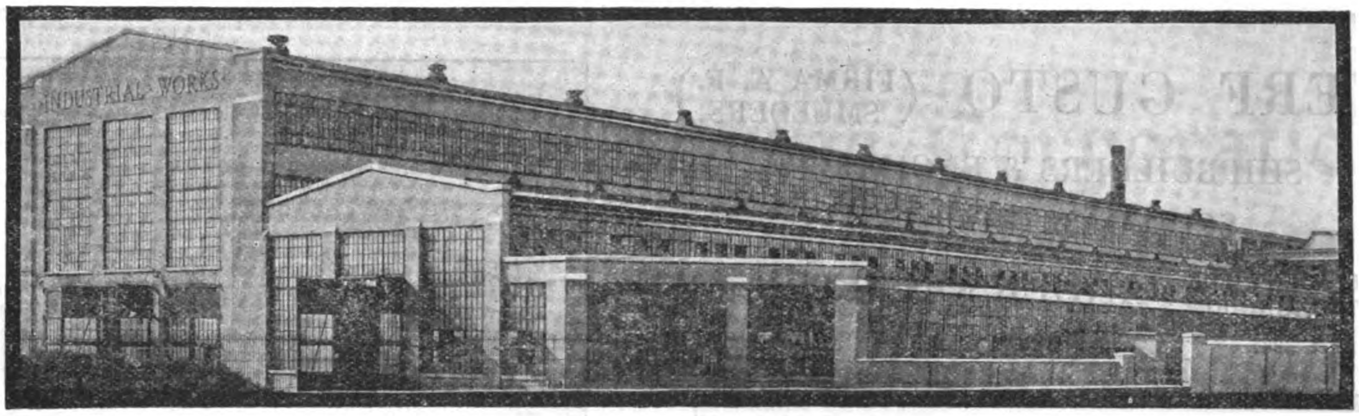

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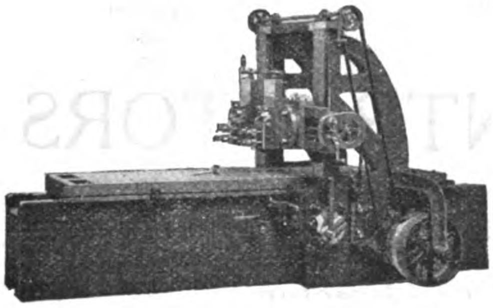

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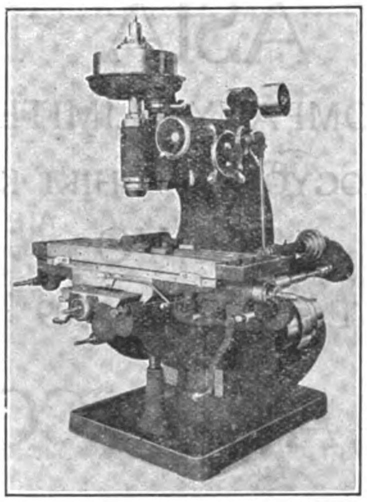

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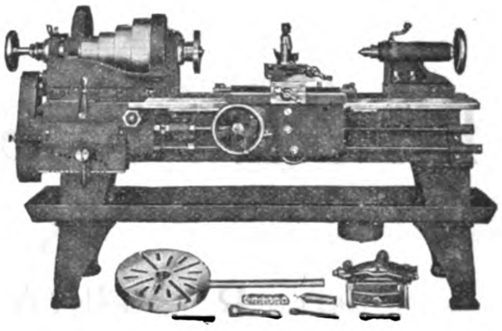

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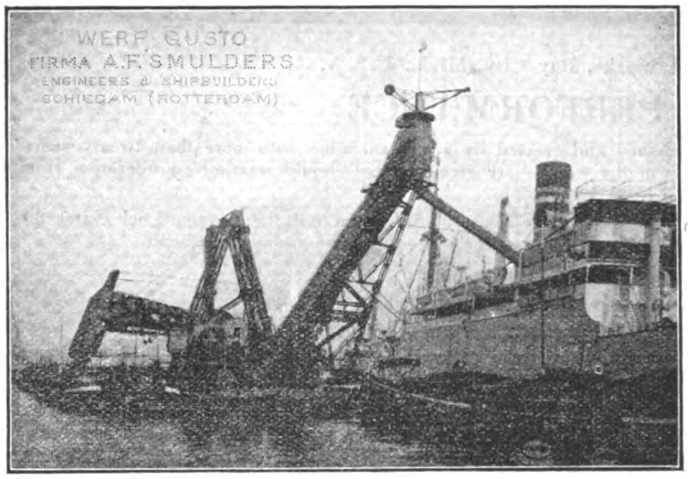

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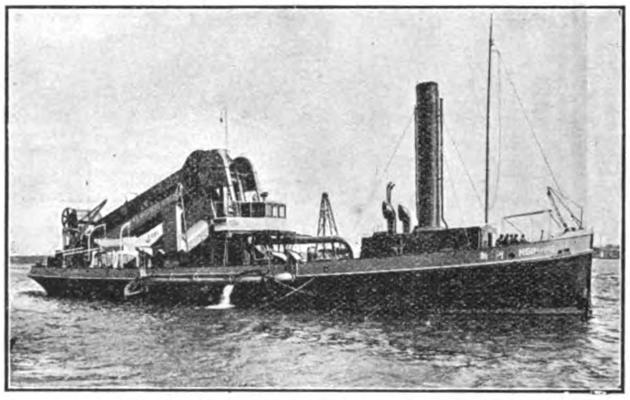
Coaling Elevator 'Westfalen' with a guaranteed contractual output of 600 tons per hour, which ran up to 1,000 tons at the trial.



DREDGER " SIN-HO "
Sea-going twin-screw bucket and trailing suction dredger with force pump.

FLOATING CRANES of great power from 50 to 400 tons and more (of late years we supplied 24 of these cranes from 60 to 400 tons.)

DREDGING PLANT of all types up to the largest capacities.

COALING VESSELS AND COALING ELEVATORS for bunkering steamers mechanically at rates from 150 to 1,000 tons per hour and upwards.

PASSENGER AND CARGO VESSELS, TANK STEAMERS, TUGS, Etc.

BOILERS of all kinds, land and marine.

BRIDGE, ROOF & CONSTRUCTIONAL STEEL WORK of every description by our Boiler and Girder Works.

A. F. SMULDERS, Grace Berleur, n/c Liege, Belgium.

THE EAST ASIA INDUSTRIAL

COMPANY, LIMITED

(TOA KOGYO KABUSHIKI KAISHA)

TOKYO

ESTABLISHED 1909

FINANCIERS AND CONTRACTORS

K. ARAI, Esq., *President*

R. SHIRAIWA, Esq., *Managing Director*

Subscribed Capital	Yen 20,000,000
Paid-up Capital	„ 7,250,000

International Banking Corporation

CAPITAL AND SURPLUS: G. $10,000,000 UNDIVIDED PROFITS: G. $3,200,000

OWNED BY THE NATIONAL CITY BANK OF NEW YORK

HEAD OFFICE: 60 WALL STREET, NEW YORK
LONDON OFFICE: 36 BISHOPSGATE, E.C.
LYONS OFFICE: 27 PLACE TOLOZAN
SAN FRANCISCO OFFICE: 232 MONTGOMERY STREET

BRANCHES:

CHINA
CANTON
HANKOW
HARBIN
HONGKONG
PEKING
SHANGHAI
TIENTSIN

DOMINICAN REPUBLIC
BARAHONA
PUERTO PLATA
SAN PEDRO DE MACORIS
SANCHEZ
SANTIAGO
SANTO DOMINGO

INDIA
BOMBAY
CALCUTTA
RANGOON

JAPAN
KOBE
YOKOHAMA

JAVA
BATAVIA
SOURABAYA

PANAMA
COLON
PANAMA

PHILIPPINE ISLANDS
CEBU
MANILA

SPAIN
MADRID
BARCELONA

STRAITS SETTLEMENTS
SINGAPORE

BRANCHES OF THE NATIONAL CITY BANK OF NEW YORK

ARGENTINA
BUENOS AIRES
ONCE (BUENOS AIRES)
ROSARIO

BELGIUM
ANTWERP
BRUSSELS

BRAZIL
BAHIA
PERNAMBUCO
PORTO ALEGRE
RIO DE JANEIRO
SANTOS
SAO PAULO

CHILE
SANTIAGO
VALPARAISO

COLOMBIA
BARRANQUILLA
BOGOTA
MEDELLIN

CUBA
HAVANA AND 22 OTHER CITIES IN CUBA

ITALY
GENOA

PERU
LIMA

PORTO RICO
PONCE
SAN JUAN

SOUTH AFRICA
CAPE TOWN

TRINIDAD
PORT OF SPAIN

URUGUAY
MONTEVIDEO
CALLE RONDEAU (MONTEVIDEO)

VENEZUELA
CARACAS
CIUDAD BOLIVAR
MARACAIBO

Commercial and Travellers' Letters of Credit, Bills of Exchange and Cable Transfers bought and sold. Current accounts opened and Fixed Deposits in local and foreign currencies taken at rates that may be ascertained on application to the Bank.

N. S. MARSHALL, *Manager.*

1A KIUKIANG ROAD.

BANQUE DE L'INDO-CHINE.

Capital	**Frs. 72,000,000**
Reserves	**„ 70,000,000**

HEAD OFFICE: 15 BIS RUE LAFFITTE, PARIS.

Succursales et Agencies:

Bangkok	Haiphong	Mongtze	Pnom-Penh	Singapore
Battambang	Hankéou	Nouméa	Pondichery	Tientsin
Canton	Hanoi	Papeete	Saigon	Tourane
Djibouti	Hongkong	Peking	Shanghai	

Bankers:

IN FRANCE: Comptoir National d'Escompte de Paris, Credit Lyonnais; Banque de Paris et des Pays-Bas; Crédit Industriel et Commercial Société Générale.

IN LONDON: The National Provincial and Union Bank of England, Ltd.; Comptoir National d'Escompte de Paris; Crédit Lyonnais.

The Shanghai Agency undertakes all banking operations and exchange business; grants credits on goods and approved securities and receives deposits on current and fixed deposits according to arrangement.

L. ARDAIN, *Manager.*

The First National Bank of Boston

Transacts commercial banking business of every nature

Correspondence Solicited

Capital, Surplus and Profits

$37,500,000

SOUTH AMERICA

HEAD OFFICE, MONTREAL, CANADA

We offer a complete banking service in the following countries, special attention being given to the handling of collections.

ARGENTINE Buenos Aires. **BRAZIL** Rio de Janeiro, Santos, Sao Paulo. **URUGUAY** Montevideo.

VENEZUELA Caracas, Ciudad Bolivar, Maracaibo, Puerto Cabello. **COLOMBIA** Barranquilla. **BR. GUIANA** Georgetown, Rose Hall, New Amsterdam.

Also 77 Branches in CUBA, PORTO RICO, DOMINICAN REPUBLIC, HAITI, COSTA RICA, BR. HONDURAS, BRITISH WEST INDIES and FRENCH WEST INDIES

590 Branches throughout CANADA & NEWFOUNDLAND

LONDON Princes St., E.C. **PARIS** 28, Rue du Quatre-Septembre. **NEW YORK** 68, William St. **BARCELONA** Plaza de Cataluna 6.

THE ROYAL BANK OF CANADA

CAPITAL PAID UP & RESERVES $35,000,000
ASSETS OVER - - - - $560,000,000

THE BANK OF TAIWAN LTD.

INCORPORATED BY SPECIAL IMPERIAL CHARTER, 1899

Capital Subscribed - - - - - - -	Yen 60,000,000
Capital Paid-up - - - - - - -	„ 45,000,000
Reserve Funds - - - - - -	„ 9,680,000

President: KOJURO NAKAGAWA, Esq. Vice-President: SHUNROKURO MORI, Esq.

DIRECTORS:

TSUNEKICHI IKEDA, Esq.
GUNJI KAWASAKI, Esq.
KUMEMATSU MORINAGA, Esq.
MASUMI ESAKI, Esq.
TADASU HISAMUNE, Esq.

Head Office: TAIPEH, FORMOSA (TAIWAN)

BRANCHES:

JAPAN: Tokio (General Affairs Department), Kobe, Moji, Osaka, Yokohama.
TAIWAN: Keelung, Tainan, Takow, and 11 other points.
CHINA: Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
OTHERS: Bangkok, Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

AGENTS AND CORRESPONDENTS:
In the Principal Cities and Towns throughout the World.

LONDON BANKERS:
BARCLAYS BANK, LTD. LLOYDS BANK, LTD. LONDON COUNTY WESTMINSTER & PARR'S BANK, LTD.

TOKYO BRANCH:
No. 1, Eiraku-cho Ni-chome, Kojimachi-ku.
Telegraphic Address: "TAIWANGINK."
Phone Nos. 1060, 1061, 1062, 1063, 1064, 1065, 1066, 446, 447, 448 and 449, Marunouchi.

Interest allowed on Fixed Deposits, and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts.

Every description of Exchange and General Banking business transacted.

Special facilities are available for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

Banque Industrielle de Chine

CAPITAL AUTHORIZED - - - - - - -	Frs. 250,000,000
CAPITAL SUBSCRIBED - - - - - - -	,, 150,000,000
CAPITAL PAID-UP - - - - - - - -	,, 75,000,000
RESERVES - - - - - - - - - - -	,, 40,000,000

One-third of the Capital, i.e., Francs 50,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the hinese Republic on the 11th January, 1913.

President: ANDRE BERTHELOT

General Manager: A. J. PERNOTTE

HEAD OFFICE: 74 RUE SAINT LAZARE, PARIS.

Branches:

ANTWERP	HANKOW	MUKDEN	SINGAPORE
BATAVIA	HANOI	NEW YORK	SWATOW
BORDEAUX	HONGKONG	PEKING	TIENTSIN
CANTON	LE HAVRE	PNOM PENH	TSINANFU
DUNQUERQUE	LONDON	ROTTERDAM	VLADIVOSTOCK
FOOCHOW	LYONS	SAIGON	YOKOHAMA
HAIPHONG	MARSEILLES	SHANGHAI	YUNNANFU

BANKERS:

IN LONDON : The London Joint City and Midland Bank, Ltd., London.

IN FRANCE : Societe Generale pour favoriser le Developpement du Commerce & de l'Industrie en France.

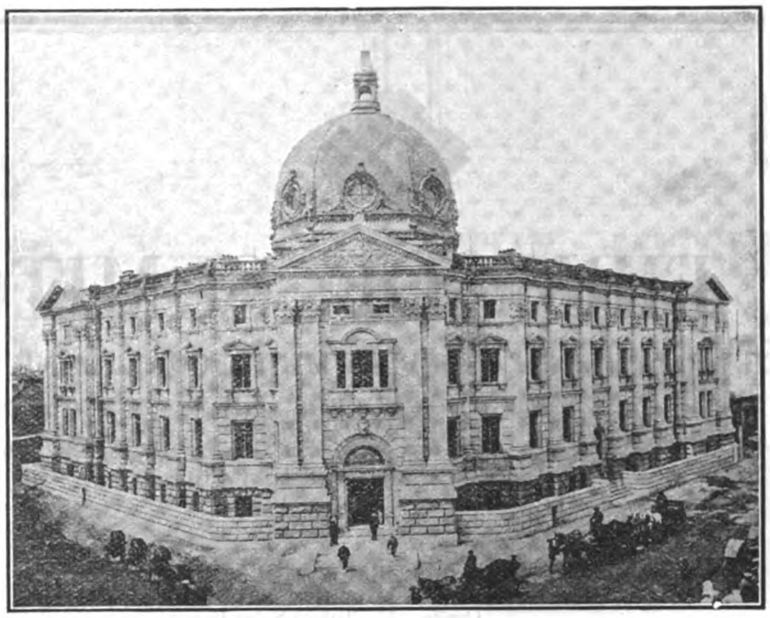
IN ITALY : Banca Commerciale Italiana. Credito Italiano.

TAELS, DOLLARS, GOLD ACCOUNTS

Interest allowed on current accounts in Gold or local currency.
Savings account and fixed deposits. Terms on application.
Every description of Banking and Exchange business transacted.

B. ADAM, *Manager*.

1 French Bund, Shanghai.



HEAD OFFICE, YOKOHAMA

Capital (Fully Paid-Up):
Yen 100,000,000

Reserve Fund:
Yen 50,000,000

CORRESPONDENTS AT ALL THE CHIEF COMMERCIAL CITIES IN THE WORLD

The Yokohama Specie Bank, Ltd.

Established 1880

DIRECTORS:

President: NAKAJI KAJIWARA, Esq.
Vice-President: SHIMAKICHI K. SUZUKI, Esq.
NAGATANE SOMA, Esq.
YUKI YAMAKAWA, Esq.
MASNOSKE ODAGIRI, Esq.
BARON KOYATA IWASAKI
KONOJO TATSUMI, Esq.
FUKUSABURO WATANABE, Esq.
IWAO MATSUKATA, Esq.
MORINOSUKE MITSUI, Esq.
BARON KAISAKU MORIMURA
REITARO ICHINOMIYA, Esq.
KENJI KODAMA, Esq.
KIMPEI TAKEUCHI, Esq.
TARO HODSUMI, Esq.

Head Office: YOKOHAMA
Manager: H. MORI., Esq.

TOKYO BRANCH
No. 1, Itchome, Eirakucho, Kojimachi-ku.
Manager: K. MOGAMI, Esq.

BRANCHES AND AGENCIES.

Batavia	Dairen	Hongkong	Los Angeles (*sub-office of San Francisco Branch*)	Nagasaki	Rangoon	Shanghai	Saigon
Bombay	Fengtien	Honolulu		Newchwang	Rio de Janeiro	Shimonoseki	Tientsin
Buenos Aires	Hamburg	Kaiyuang		New York	Saigon	Singapore	Tsingtau
Calcutta	Hankow	Kobe	Lyons	Osaka	San Francisco	Sydney	Tsinan
Changchun	Harbin	London	Manila	Peking	Seattle	Sourabaya	Vladivostock

LONDON BANKERS

LLOYD'S BANK, LIMITED
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LIMITED
NATIONAL PROVINCIAL AND UNION BANK OF ENGLAND, LIMITED
LONDON JOINT CITY AND MIDLAND BANK, LIMITED

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted.
For particulars, apply to the managers.

THE FIRM OF SUMITOMO

OWNERS OF BESSHI COPPER MINE, COAL MINE, ETC.

MANUFACTURERS OF

Tubes, Piates, Sheets and Bars of Copper Brass, Bronze and other Copper Alloys, Solid Drawn Steel Tubes, Nails, Electric Wires and Cables, Artificial Fertilizer, etc.

WORKS AND DEPARTMENTS

General Head Office	Osaka	Tokyo Sales Department	Tokyo
Besshi Copper Mine Office	Niihama, Iyo	Kure Sales Department	Kure near Hiroshima
Copper Sales Department	Osaka & Kobe	Yokosuka Sales Department	Yokosuka
Warehouses	Osaka, Kobe & Toyko	Hakata Sales Department	Hakata
Wakamatsu Coal Department	Wakamatsu, Chikuzen	The Sumitomo Yoko	Shanghai
Copper Works	Osaka & Amagasaki	The Sumitomo Yoko	Hankow
Electric Wire and Cable Works	Osaka	The Sumitomo Yoko	Tientsin
Fertilizer Manufactory	Niihama, Iyo	The Sumitomo Bank of Hawaii	Honolulu
Sapporo Mine Office	Sapporo, Hokkaido	The Sumitomo Bank of Seattle	Seattle

THE SUMITOMO STEEL WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of every description for Railways, Shipbuilding Yards, Mines, Hydraulic, Electric and other Engineering Works, etc. etc.

THE SUMITOMO BANK, LIMITED

OSAKA, JAPAN

Cable Address: "SUMITBANK"

President: Baron K. SUMITOMO

Capital Subscribed	Yen 70,000,000	Reserve Fund	Yen 12,000,000
Capital Paid-up	„ 40,000,000	Deposits (30th June, 1920)	„ 360,000,000

HOME BRANCHES:

Tokyo, Yokohama, Nagoya, Kyoto, Kobe, Hyogo, Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Kokura, Wakamatsu, Hakata, Kurume.

FOREIGN OFFICES:

New York, San Francisco, Shanghai, Hankow, Bombay, London, Seattle (Affiliated Bank), Hawaii (Affiliated Bank).

AGENTS:

National City Bank of New York, New York. Lloyds Bank Ltd., London.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.

THE

MITSUBISHI BANK,

LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida — Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo — Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku,
Tokyo, Japan.

BRANCH OFFICES:

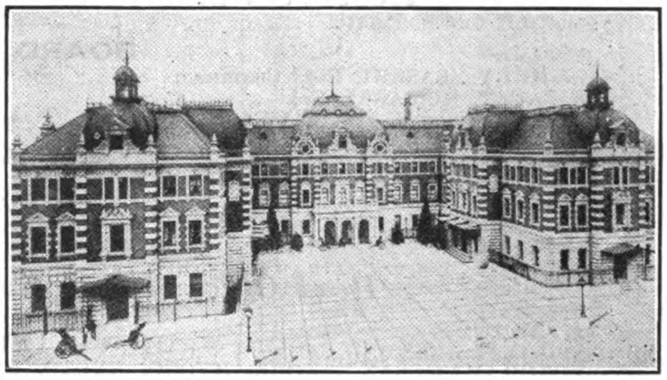
Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1680



Capital Subscribed.............................Y. 100,000,000.00
Capital Paid-Up.....................Y. 60,000,000.00
Reserve Fund (July 1920)......Y. 24,200,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku,
TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

MORINOSUKE MITSUI, Esq., TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

OTARU, FUKAGAWA (Tokyo), HAKOZAKI (Tokyo), YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London: Barclays Bank, Ltd.
London Joint City & Midland Bank, Ltd.
New York: The National City Bank of New York.
Guaranty Trust Co. of New York.
The Chase National Bank.
Bankers Trust Co.
Paris: Banque de l'Union Parisienne.
Comptoir National d'Escompte de Paris.
Bombay: National Bank of India, Ltd.

DAI-ICHI GINKO, LIMITED

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Capital (Authorized) - - -	Yen 50,000,000
Capital (Paid-Up) - - - -	Yen 29,525,000
Reserve Fund - - - -	Yen 18,500,000

BOARD OF DIRECTORS:

Y. SASAKI, Esq., Chairman.
T. KUMAGAI, Esq.
Prince Y. TOKUGAWA.
Y. KUSAKA, Esq.
K. ISHII, Esq.
S. SASAKI, Esq.
K. SAIONJI, Esq.
Y. NOGUCHI, Esq.
T. SUGITA, Esq.

AUDITORS:

T. DOKI, Esq. J. TAKEYAMA, Esq.

ADVISER:

Baron E. SHIBUSAWA.

Head Office: No. 1 Kabuto-cho, Nihombashi-ku, Tokyo

BRANCHES:

YOKOHAMA, OSAKA, KOBE, HYOGO, KYOTO, FUSHIMI, NAGOYA, YOKKAICHI, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, SEOUL AND FUSAN.

CORRESPONDENTS:

The Bank, in addition to its own Branches, has Correspondents in the principal cities and towns at home and abroad, and is able to give every facility for the transmission and collection of money.

THE RATES OF INTEREST on Current Accounts, Fixed Deposits and Special Current Accounts can be ascertained on application. CHEQUES certified by this Bank are taken as cash for the Customs Duties, and DEPOSIT RECEIPTS of this Bank as security for the Consumption Tax.

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Capital fully paid up	P. 6,750,000.00
Reserve funds	P. 4,900,000.00

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

London: National Bank of Scotland, Ltd.
Spain: Banco Hispano-Americano
Hongkong: Netherland India Commercial Bank
San Francisco: Wells Fargo Nevada National Bank
New York: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.
Paris: Comptoir National d'Escompte
Australia: Bank of New South Wales
Shanghai: Bank of Canton, Ltd.
Chicago: Continental & Commercial National Bank
Japan: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, *President*

No. 10 PLAZA DE CERVANTES, MANILA, P. I.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	$15,000,000
Reserve Funds: Sterling	£1,500,000
Silver	$23,000,000
Reserve Liability of Proprietors	$15,000,000

Court of Directors:

Hon. Mr. E. V. D. PARR, Chairman
A. H. COMPTON, Esq., Deputy Chairman
G. M. DODWELL, Esq.
G. T. M. EDKINS, Esq.
A. S. GUBBAY, Esq.
Hon. Mr. P. H. HOLYOAK
Hon. Mr. J. JOHNSTONE
A. O. LANG, Esq.
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . A. G. STEPHEN

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY, BANGKOK, BATAVIA, BOMBAY, CALCUTTA, CANTON, COLOMBO, FOOCHOW, HANKOW, HARBIN, ILOILO, IPOH, JOHORE, KOBE, KUALA LUMPUR, LONDON, LYONS, MALACCA, MANILA, NAGASAKI, NEW YORK, PEKING, PENANG, RANGOON, SAIGON, S. FRANCISCO, SHANGHAI, SINGAPORE, SOURABAYA, TIENTSIN, TSINGTAO, VLADIVOSTOCK, YOKOHAMA

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

Managing-Directors:
YUTSUHA SATO, Esq.
KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
MARQUIS YORIMICHI TOKUGAWA
VISCOUNT YUKIYOSHI AOYAMA
HON. NAGAYUKI ASANO
YOSHITERU SHIMIZU, Esq.
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
BARON MICHITOMO IWAKURA
NAOYOSHI YAMAMOTO, Esq.
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

Head Office Manager: **Kiyosumu Tanikawa, Esq.**

LONDON BANKS AND AGENTS:
LAZARD BROTHERS & CO., LTD.
UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINISTER AND PARR'S BANK, LTD.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED - - - - - - Yen 50,000,000
CAPITAL PAID-UP - - - - - - - Yen 45,000,000

HEAD OFFICE:
MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:
TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
Y. ONO, Esq., Vice-President
K. IYANAGA, Esq., Director
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:
NAGATANE SOMA, Esq.
KINTARO HATTORI, Esq.
KINICHI KAWAKAMI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City
Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

UNION INSURANCE SOCIETY OF CANTON, LIMITED

(Incorporated in Hongkong)

With which are amalgamated

BRITISH TRADERS' INSURANCE COMPANY, LTD.

AND

THE CHINA FIRE INSURANCE COMPANY, LTD.

(Both incorporated in Hongkong)

JOINT ASSETS EXCEED $30,000,000

HEAD OFFICE: HONGKONG
LONDON BRANCH: 9 Royal Exchange, E.C.
LONDON FIRE OFFICE: 10 George Yard, E.C.

BRANCHES AND AGENCIES THROUGHOUT THE WORLD

Marine, Fire, Accident, Motor Car, Burglary, Guarantee, Workman's Compensation, and all other classes of Insurance, except Life.

C. MONTAGUE EDE,
General Manager.

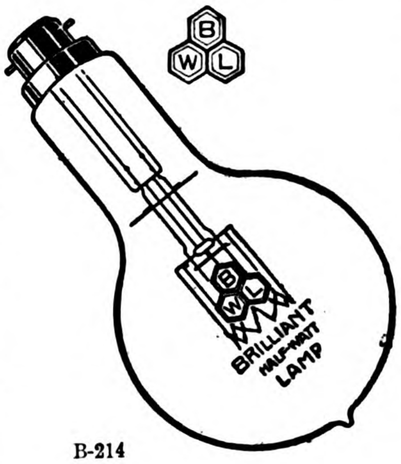
BRILLIANT Half Watt LAMPS

give MORE LIGHT, BETTER LIGHT
at LESS COST than any vacuum lamp.

Call at our Show Room Nanking corner
Honan Roads and we'll convince you.

THE BRILLIANT ELECTRIC CO.

Dependable Suppliers of Everything Electrical.



博利安半華德電泡
加倍光明減半電費

博利安電料公司
上海英大馬路抛球場
電話中央四九〇七

B-214

MITSUBISHI MARINE & FIRE INSURANCE Co., Ltd.

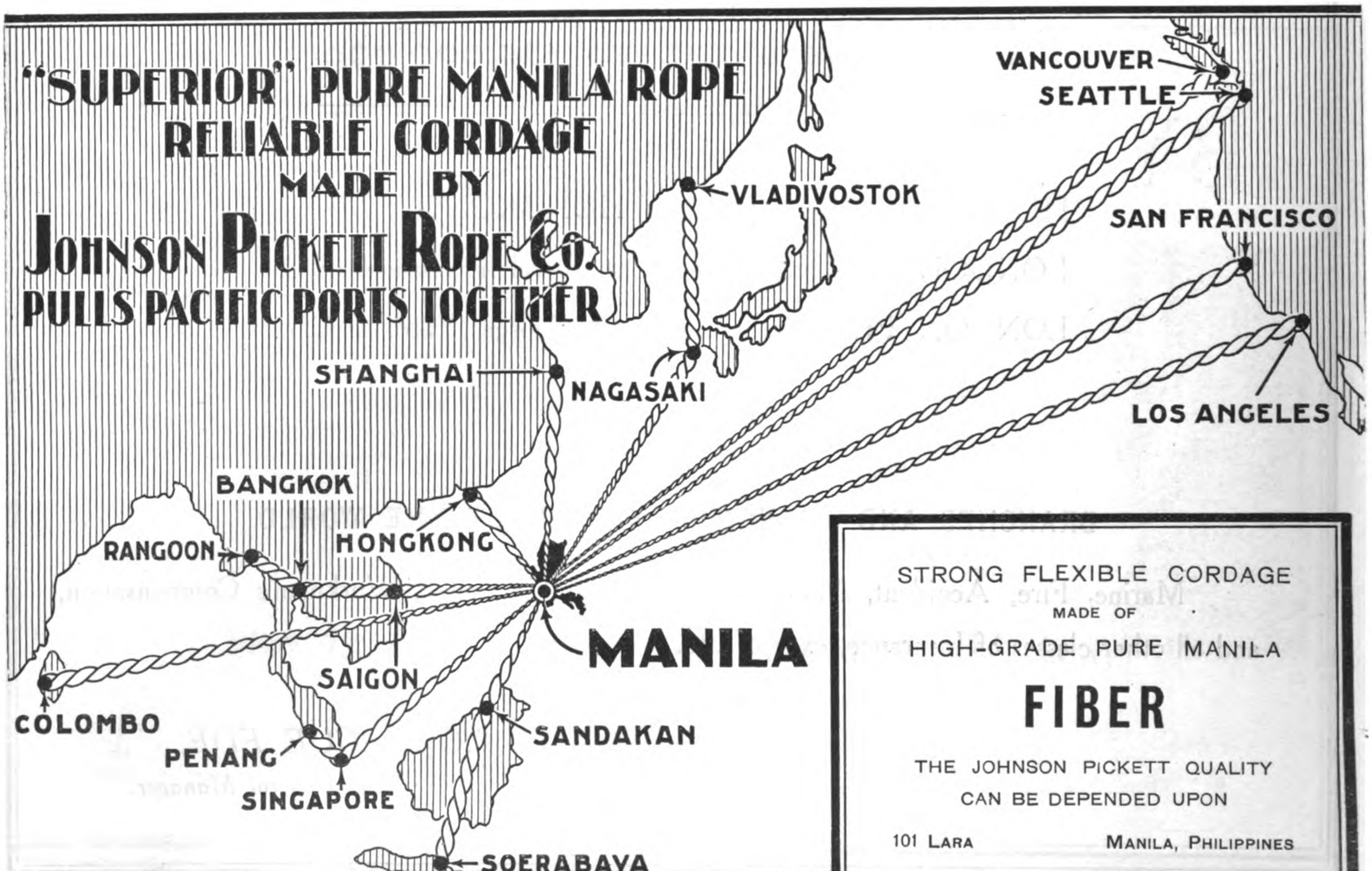
MITSUBISHI KAIJO KASAI HOKEN
K. KAISHA

Head Office:
MARUNOUCHI, TOKYO

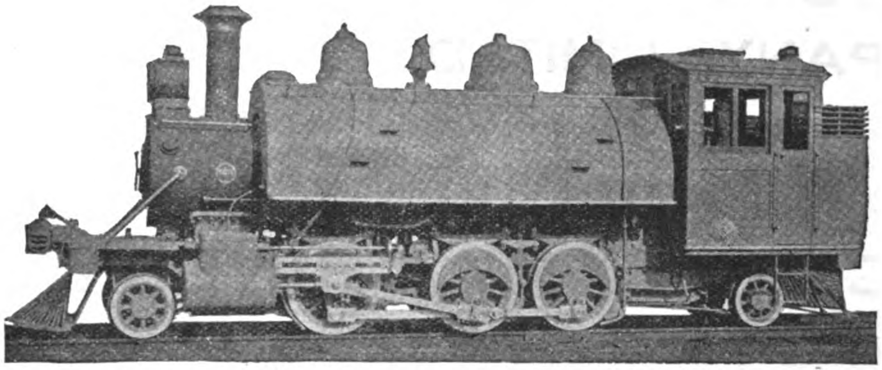
SUBSCRIBED CAPITAL - - Yen 5,000.000
PAID-UP CAPITAL - - - „ 1,250.000

Branches and Agencies:

LONDON, NEW YORK, OSAKA, KOBE, SHANGHAI, AND OTHER IMPORTANT CITIES AND PORTS IN THE WORLD



Repeat Orders Demonstrate that Baldwin Locomotives Give Full Satisfaction



SIX-COUPLED DOUBLE-ENDER SADDLE TANK LOCOMOTIVE

Gauge 4-feet 8½-inches. Cylinders 16 × 24-inches. Working pressure, 180 pounds per square inch. Total heating surface, 1,161 square feet. Total weight, 113,100 pounds. Tractive force, at 85 per cent. of boiler pressure, 21,360 pounds. Service, Switching and General Utility.

In 1919, the Peking-Suiyuan Railway of China ordered three 6-coupled double-ender saddle tank locomotives as illustrated. So successsful were these locomotives in operation that ten duplicates were ordered on May 22, 1920, with request for early shipment.

The first locomotive was constructed September 23. On October 15, the full number were completed and shipped from our docks at Eddystone on the s.s. *Tuscan Prince* direct to Taku Bar.

We are prepared at all times to build locomotives for foreign railways, either to our own designs or to their individual specifications, and will speed up deliveries to accommodate our customer's demands.

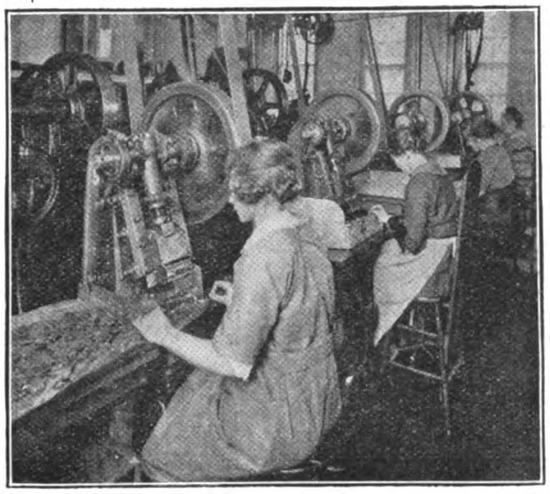
Our nearest representative is at your service at all times.

ANDERSEN, MEYER & CO., LTD., Shanghai and New York
SALE & FRAZER, LTD., Tokyo and New York
J. O. FEENSTRA, Bandoeng, Java, D. E. I.
R. TOWNS & CO., Sydney, New South Wales
LESLIE & CO., Perth, West Australia
C. BREWER & CO., LTD., Honolulu, Hawaii
PHILLIPS & PIKE, Wellington, New Zealand
NEWELL & CO., Melbourne, Victoria

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA, U.S.A. CABLE ADDRESS: "BALDWIN, PHILADELPHIA"

BY UNIT OR BATTERY



Last month we showed you a No. 18 BLISS inclinable press in operation in the plant of the Griest Manufacturing Company of New Haven, Conn., U.S.A. We now show you a battery of four such presses at work in the same plant. All four machines are repunching sewing machine attachments from cold-rolled steel, 0.035 or 0.025 stock, at the rate of 12,000 to 15,000, each 9½ hours. All four machines were installed years ago, and have been in uninterrupted use ever since.

There's a BLISS Press for every purpose. Write us, in full detail, of *your* particular needs (send sample, detailed drawing or blue-print; specify material, rate of production, etc.) and we will tell you just what BLISS Equipment you should have.

E. W. BLISS COMPANY

22 JOHN STREET BROOKLYN, N.Y., U.S.A.

EUROPEAN OFFICES:

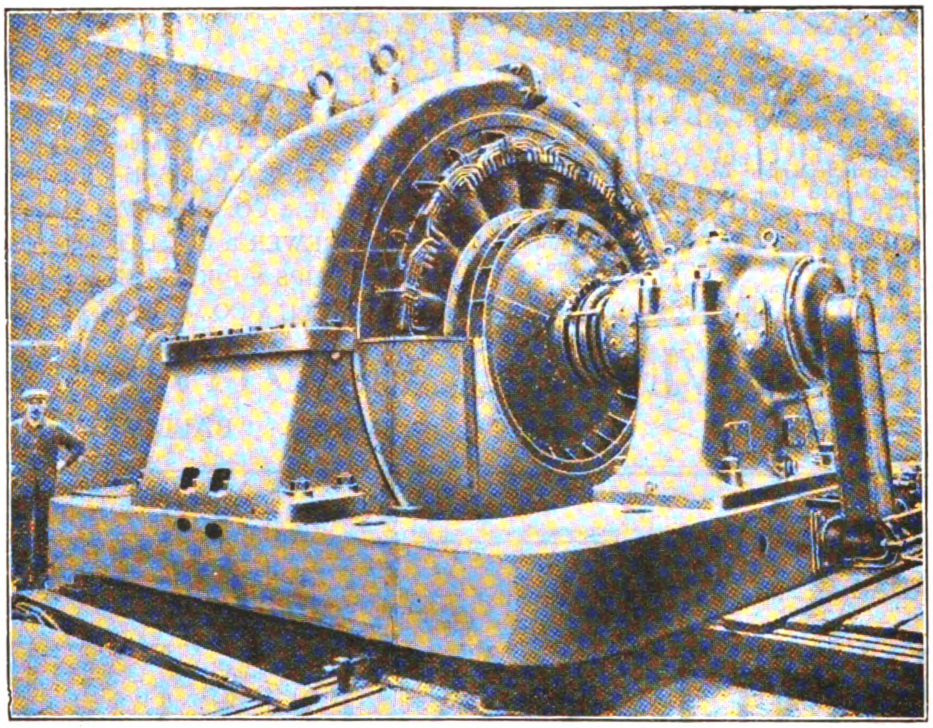
London, S.E., England
Pocock Street, Blackfriars Road

Paris, France
100 Boulevard Victor Hugo, St. Quen, Paris

THE ENGLISH ELECTRIC COMPANY, LIMITED

WORKS—
ORDNANCE WORKS, COVENTRY.
SIEMENS WORKS, STAFFORD.
DICK, KERR WORKS, PRESTON.
PHOENIX WORKS, BRADFORD.
WILLANS WORKS, RUGBY.

HYDRO-ELECTRIC MACHINERY



ONE OF SIX 7,775 K.V.A. HYDRO-ELECTRIC GENERATORS SUPPLIED TO A JAPANESE COMPANY

THE COMPANY ARE MANUFACTURERS OF: STEAM TURBINES, CONDENSERS, DIESEL OIL ENGINES, ELECTRIC POWER AND SUB-STATION PLANT, COMPLETE ELECTRIC RAILWAY AND TRAMWAY EQUIPMENTS, ROLLING STOCK, A.C & D.C. MOTORS, SWITCHGEAR, ETC.

JAPANESE OFFICE:

ENGLISH ELECTRIC CO., LTD., 3 ITCHOME, UCHISAIWAICHO, KOJIMACH-KU, TOKYO

CHINESE OFFICE:

JARDINE, MATHESON & CO., LTD., ENGINEERING DEPT., 8a YUEN-MING-YUEN ROAD, SHANGHAI

HEAD OFFICE:

QUEEN'S HOUSE, KINGSWAY, LONDON, W.C.2

CABLES—"ENELECTICO LONDON"

A Real Machine Tool

This Wall Radial Drill is a real machine tool in every sense of the word. It is properly designed and carefully constructed of the finest materials obtainable. Every feature has been added to insure ease of operation and accurate output. Your factory walls from the column of this machine and it proves as rigid under strain as any machine on the floor.

You save in first cost, floor space and operating time by insisting on L-F Wall Radial Drills.

Get the full details from bulletin. They make interesting reading.

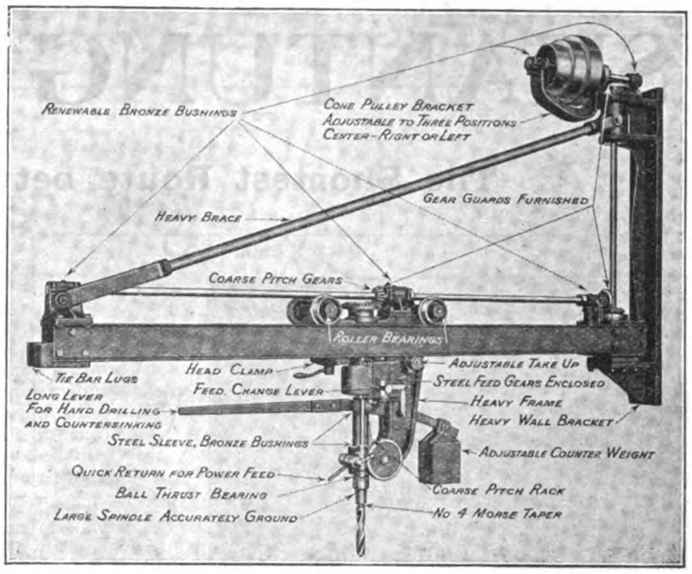
GET IT TO-DAY.

LYND-FARQUHAR CO.

Machine Tools of Quality.

419-425 ATLANTIC AVE.,

Boston 9, Mass., U.S.A.



MADE IN FOUR STANDARD SIZES

Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.

BETTS HEAVY DUTY HORIZONTAL, BORING, DRILLING AND MILLING MACHINE

The needs for Heavy Duty Horizontal Boring, Drilling and Milling can be well taken care of by the installing of a Betts Heavy Duty Machine.

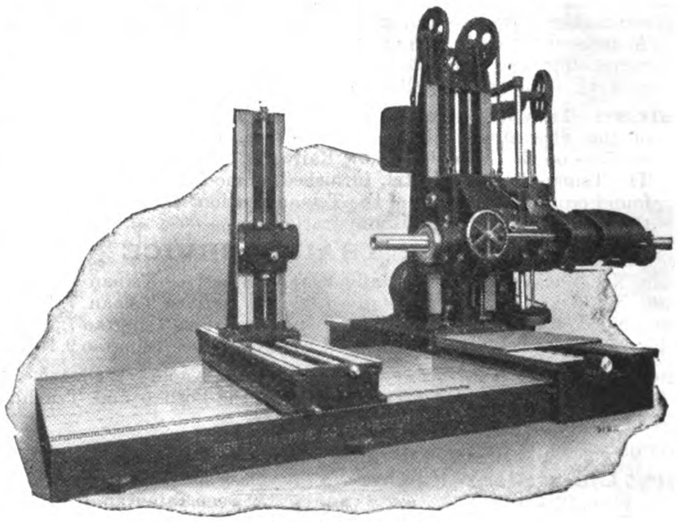
A machine of extremely general use for shipyards and shops having to do heavy machine work. Can be used for all kinds of drilling, milling and boring operations within its capacity.

This machine is made with either $5\frac{1}{2}$ or 6-in. Spindle. The Vertical saddle and horizontal Feed can be made to suit the requirements of the customer. Can be furnished either with or without Floor Plate.

The installation of a Betts Machine raises both the standard of the work turned out and the standard of the workman.

Betts Machines allow for the handling of the work by the machine and the accuracy of the operation to be assisted by the skill of the mechanic.

A Betts Machine Tool for every need in heavy duty work.—Let us have your problems.



FLOOR BORER

Engine Lathes, Axle Lathes, Journal Trueing Lathes, Vertical Boring and Turning Mills, Tire Turning and Boring Mills, Horizontal Boring Machines, Planing Machines, Slotting Machines, Multiple Spindle Milling Machines and Munition Manufacturing Machines.

Cable Address "Betts" Rochester

BETTS MACHINE COMPANY

405 WINTON ROAD, ROCHESTER NEW YORK, U. S. A.

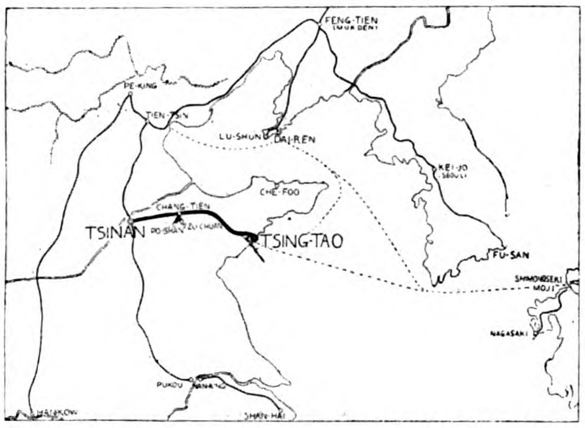
Established in 1861

ANDERSEN, MEYER & CO., LTD., Shanghai, China

Exclusive Representatives for China and Manchuria

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1	leaves Tsingtao	daily	8.00 a.m.	arrives Tsinan	6.30 p.m.
Train No. 3	leaves Tsingtao	daily	7.00 p.m.	arrives Tsinan	7.00 a.m.
Train No. 2	leaves Tsinan	daily	9.00 a.m.	arrives Tsingtao	7.30 p.m.
Train No. 4	leaves Tsinan	daily	9.30 p.m.	arrives Tsingtao	9.10 a.m.

Local Trains run between Tsingtao and Kaohi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

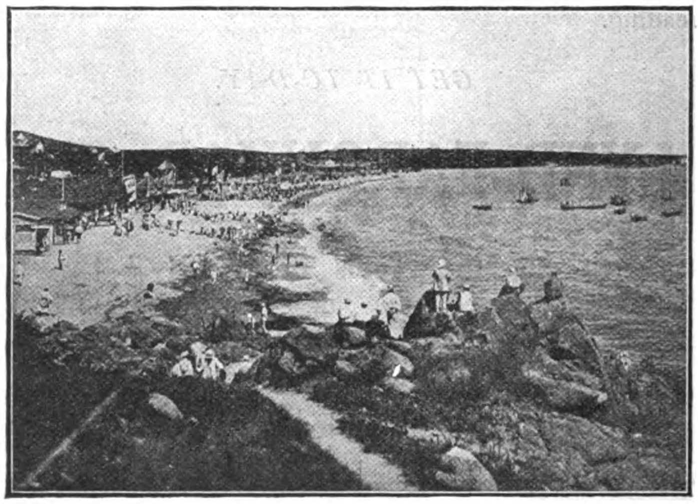
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.43 & 10.21 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.

TSINGTAU STATION

For Further Information, please apply to

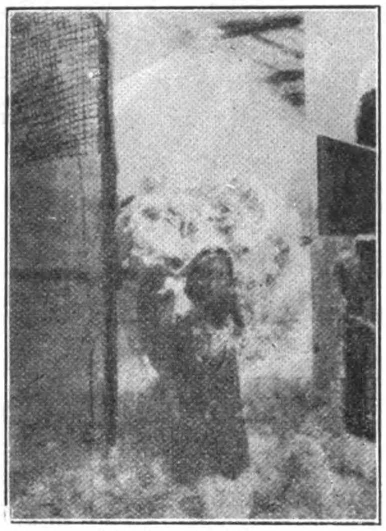
THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

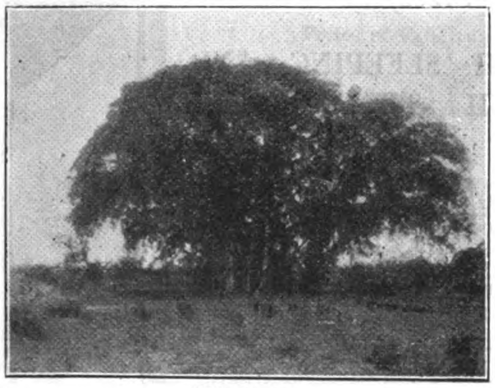
JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA? IF NOT, DO SO NOW!

Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.



Girl Carrying Capoc.



Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

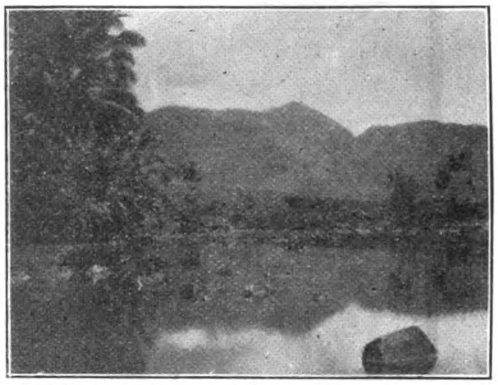
And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

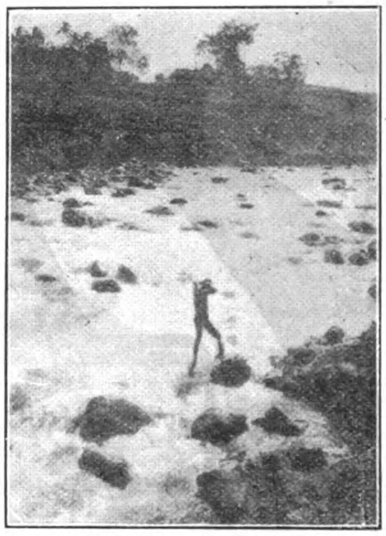
THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

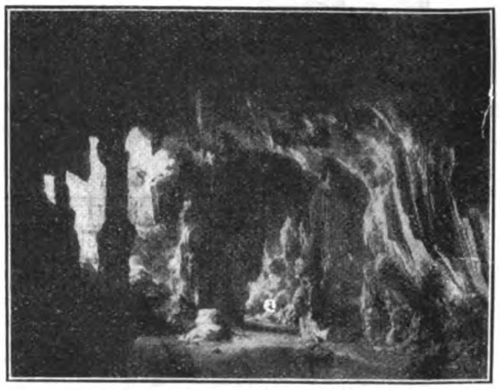
For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.



Pond in the Neighborhood of Garoet.



River Brantas, Malang.



Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

The photographs in this advertisement are from "The Joint-Stock Co., Photographer's Studio, Kurkdjian, Soerabaia."

JAPANESE GOVERNMENT RAILWAYS
THOROUGHLY EQUIPPED LINES REACH EVERY PLEASURE RESORT AND BUSINESS POINT
Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes
WELL-FURNISHED PASSENGER CARS WITH SLEEPING AND DINING ACCOMMODATION ON THROUGH TRAINS AND EXPRESSES
OFFICIAL GUIDE TO EASTERN ASIA
1st Vol. Manchuria and Chosen Y. 7.00 Sold at Kelly & Walsh (Yokohama, Shanghai)
2nd „ S.W. Japan Y. 5.00 „ Maruzen (Tokyo)
3rd „ N.E. Japan Y. 5.00 „ Offices of Japan Tourist Bureau (Tokyo, Kobe, Peking, etc., etc.)
4th „ China (Proper) Y. 7.00
5th „ East Indies Y. 5.00 „ G. P. Putnam's Sons Co. (New York)
„ The Philippine Educational Co. (Manila)

JAPANESE GOVERNMENT RAILWAYS
THROUGH BOOKING TO AND FROM
CHINA
Single and Return Tickets between China and Japan via Chosen
Period of Validity: Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets
China-Japan Party Trip Tickets
Period of Validity: Two months. Reduction: 25%-50% for 10 or more passengers
China-Japan Circular Tour Tickets
Period of Validity: Four months. Reduction: 30% for Railway; 25% for Steamer
China-Japan Parcel Through Traffic
Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates
FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC BUREAU, DEPARTMENT OF RAILWAYS,
TOKYO

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

MIIKE COAL

The Finest Steaming and Bunker Coals of the Far East are mined from the famed Miike, Tagawa, Yamano, Sunakawa and Kawakami Collieries operated by the

MITSUI

MINING COMPANY, LTD.

HEAD OFFICE:
No. 1 Surugacho, Nihonbashi-Ku,
TOKYO, JAPAN

Capital - - Yen 100,000,000

Annual Coal Output is equal to one-quarter of Total Japanese Mines.

LEAD, SILVER, GOLD, ZINC, COPPER, SPELTER, SULPHUR, COKE, IRON, CHEMICALS and DYES

Are produced from the Company's, KAMIOKA, Lead, Silver and Zinc Mine; SANO, Copper and Zinc Mine; KUSHIKINO, Gold Mine; KONGO, Tungsten Mine; IWAONOBORI, Sulphur and Metal Mine; Zinc Plants, Coke, Dyestuffs and By-products Establishments in Miike.

***Sole Agents for our Products*:**

MITSUI BUSSAN KAISHA, Ltd.

(MITSUI & Co., Ltd.)

Tokyo, London, New York, Shanghai, Hongkong, and other Principal Commercial Centres of the World.

Cable Address:
"IWASAKISAL-
TOKYO"

Code Used:
A. 1., A.B.C. 5th, Western Union, Bentley's Complete Phrase

MITSUBISHI SHOJI KAISHA, LD.

(MITSUBISHI TRADING CO., LTD.)

Capital, fully paid-up - - - Y. 15,000,000

***Head Office*:**
MARUNOUCHI, TOKYO.

Importers and Exporters, Manufacturers, Commission Merchants, Brokers, Ship Owners.

EXPORTING:

Coal, Copper and all Other Descriptions of Metals, Minerals and Cereals, Chemicals, Oil, Paper, Glass, Canned Fish, Silk Goods, and General Oriental Products and Merchandise

IMPORTING:

Iron, Steel, Machinery, Machine Tools, Chemicals, and General Merchandise

ANNUAL PRODUCTION:

Electrolytic Copper Ingots	20,000	Tons
Pig Iron	100,000	,,
Steel	50,000	,,
Coal	3,500,000	,,

COLLIERIES:

Takashima, Ochi, Yoshinotani, Kishidake, Namazuta, Shinnew, Hojo, Kanada, Kamiyamada, Ashibetsu, Bibai, O-Yubari, and Sakito

BRANCHES and AGENCIES:

Tokyo, Yokohama, Nagoya, Osaka, Kobe, Moji, Wakamatsu, Karatsu, Nagasaki, Otaru, Tsuruga, Kure, Muroran, Hakodate, Kushiro, Vladivostok, Dairen, Kirin, Harbin, Peking, Shanghai, Hankow, Hongkong, Canton, Tientsin, Tsingtao, Tsinan, Singapore, London, Paris, Lyon, Marseilles, Berlin, New York, Seattle.

STEAMSHIP DEPARTMENT—KOBE

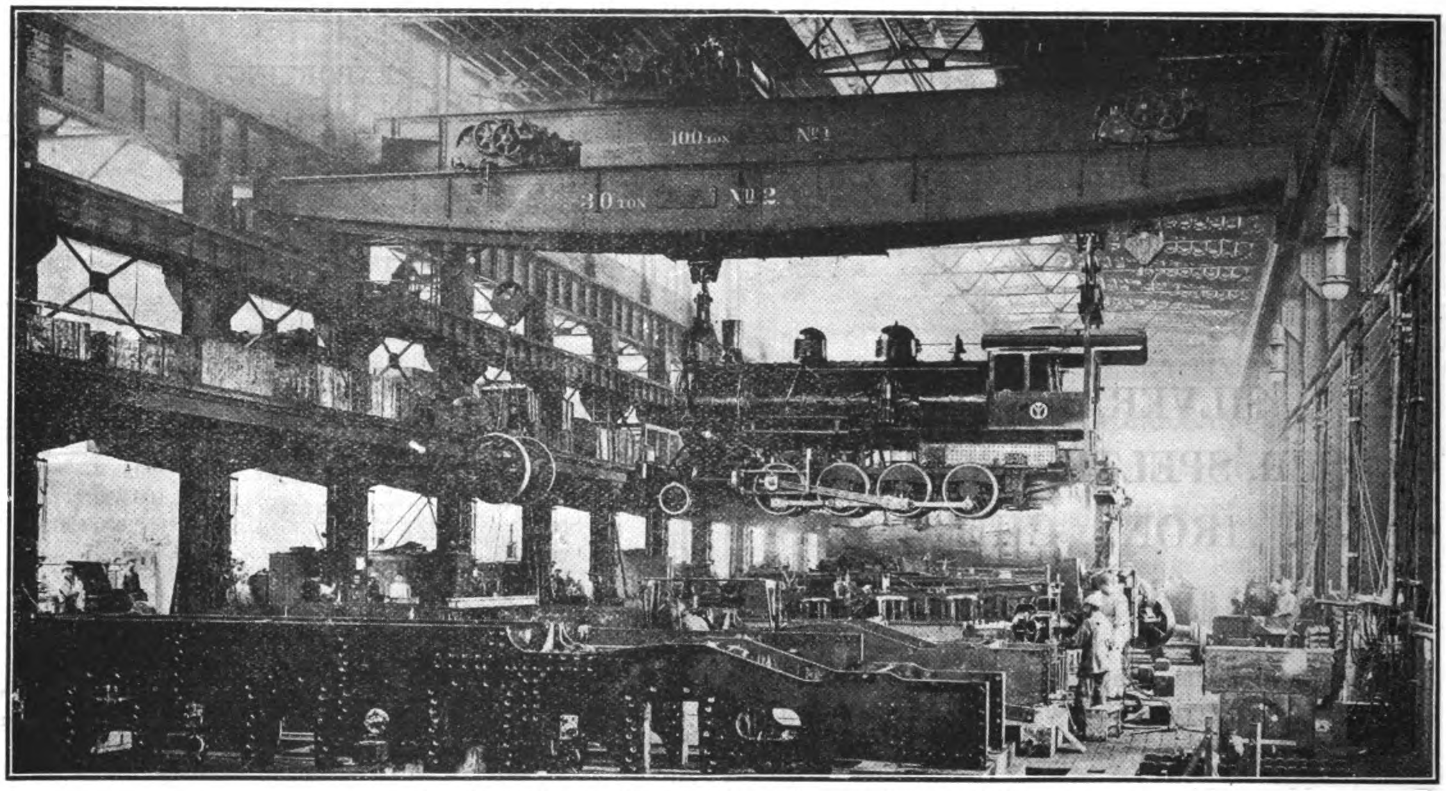
Fleet Owned	25,000	Tons	Gross
Chartered Steamers	12,000	,,	,,

Regular and Irregular Routes between home ports and Chinese and South Sea Islands Ports, etc.

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

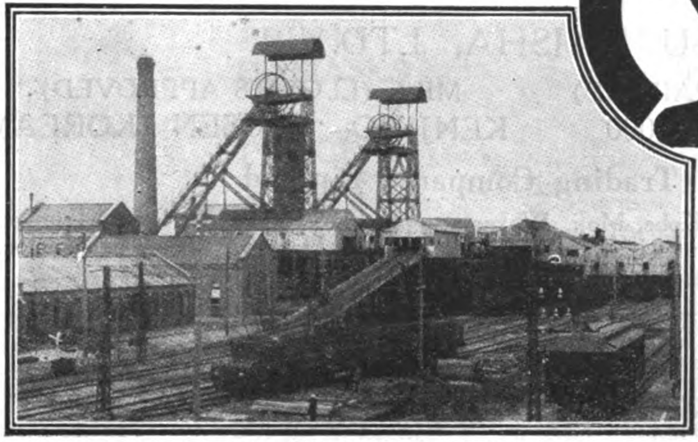
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

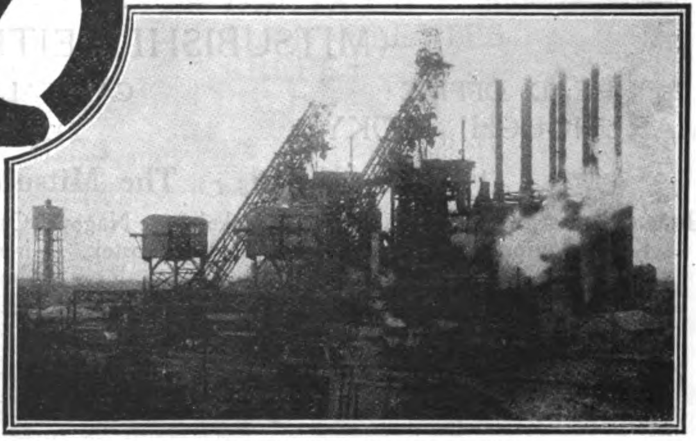
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

Dairen	Port Arthur	Newchwang
(Yingkou)	Tientsin	Tsingtao

Agencies:

Chefoo	Takao	Osaka
Manila	(Formosa)	Nagoya
Hongkong	Batavia	Shanghai
Sourabaya	Yokohama	Moji
Singapore	South Seas	Saigon
Penang	Niigata	etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,

South Manchuria Railway Company, Dairen

ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

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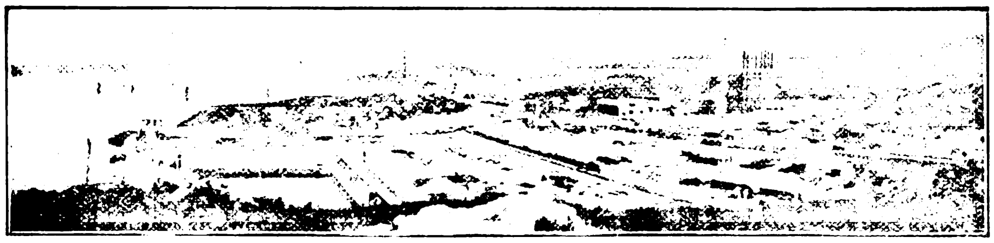

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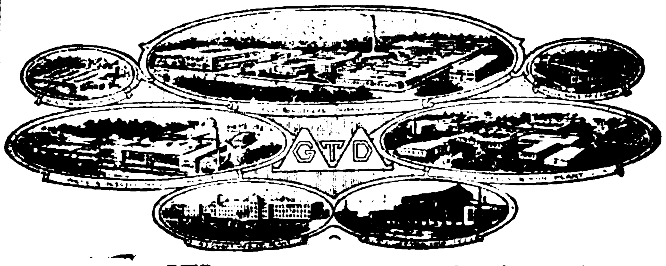

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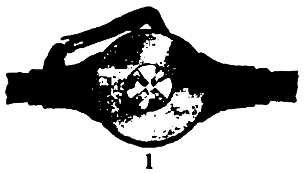

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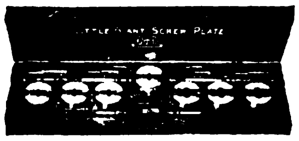

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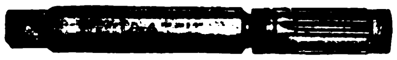

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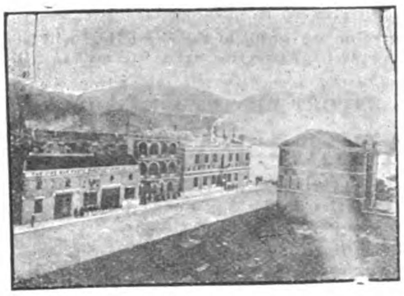

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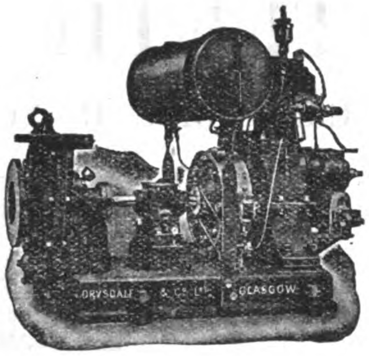

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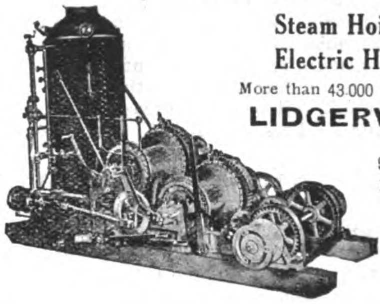

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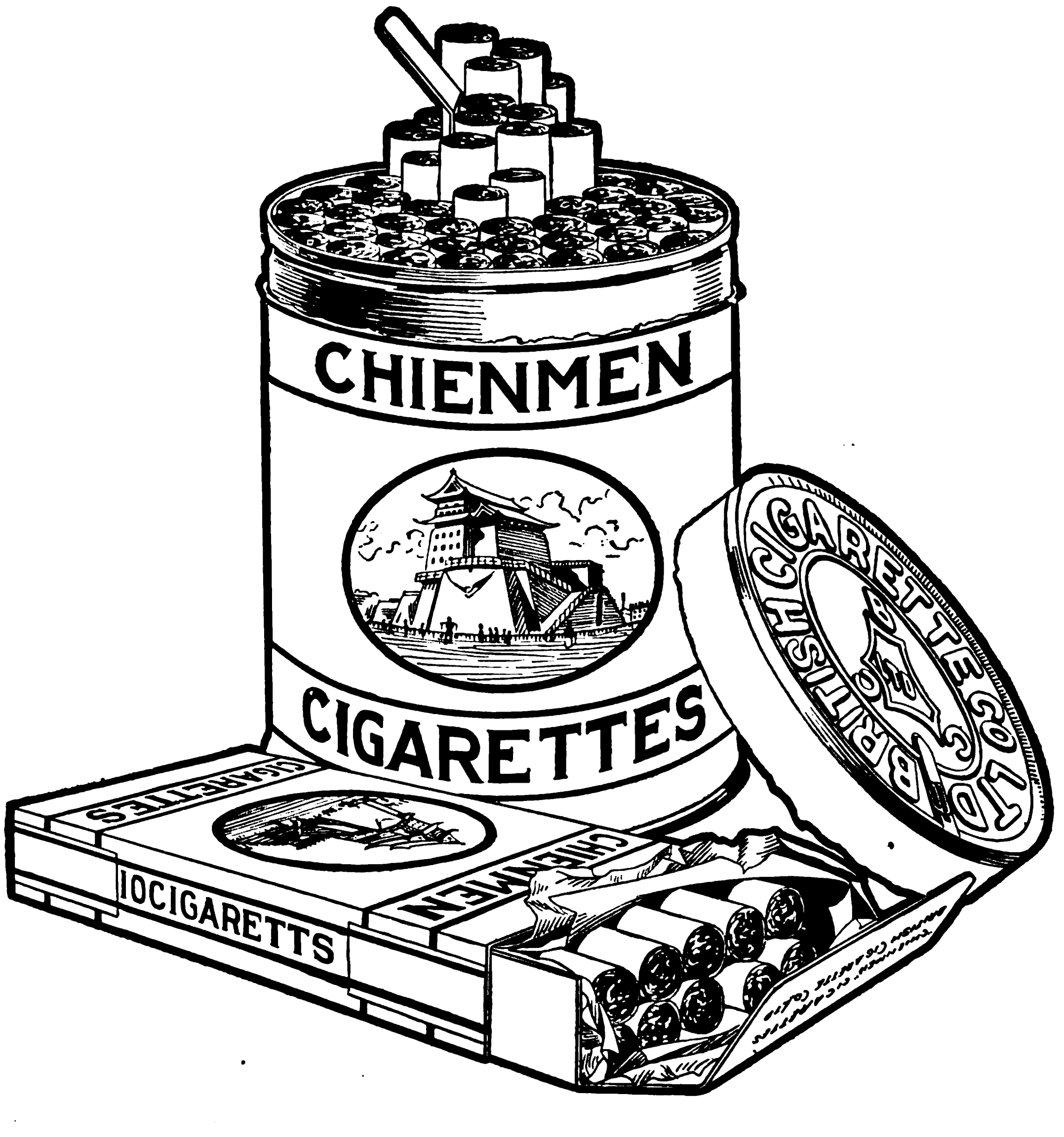

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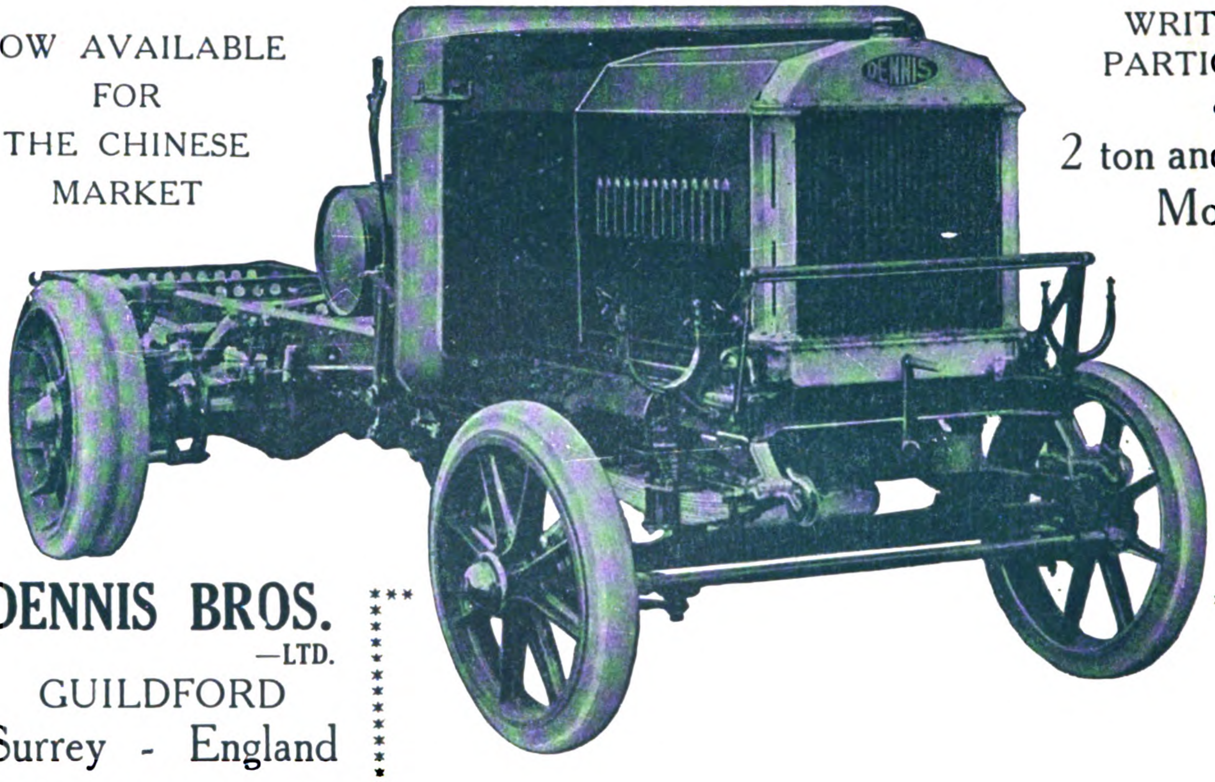

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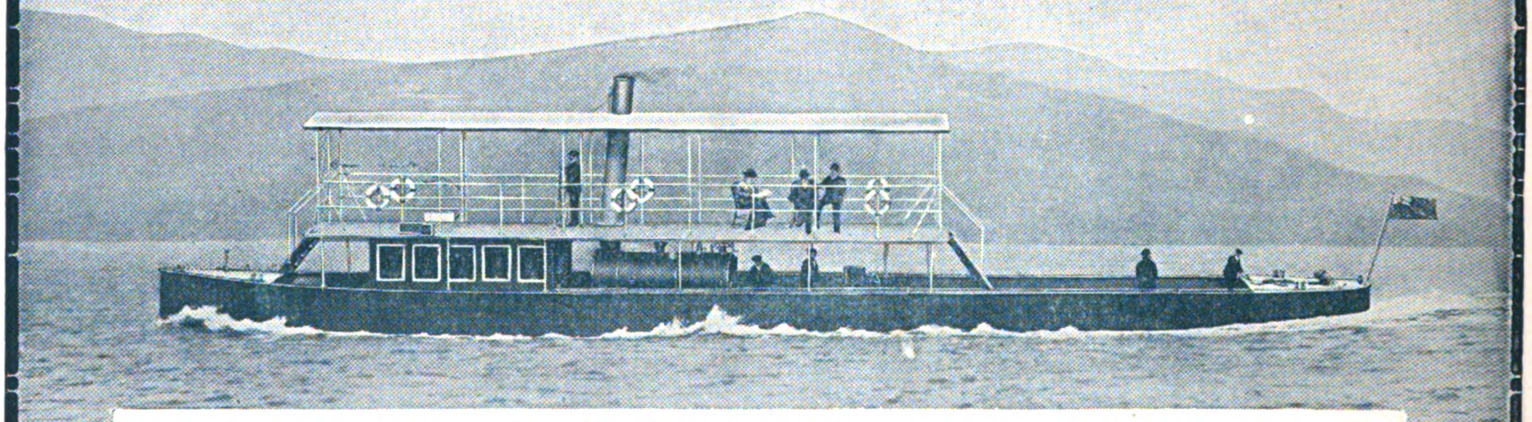

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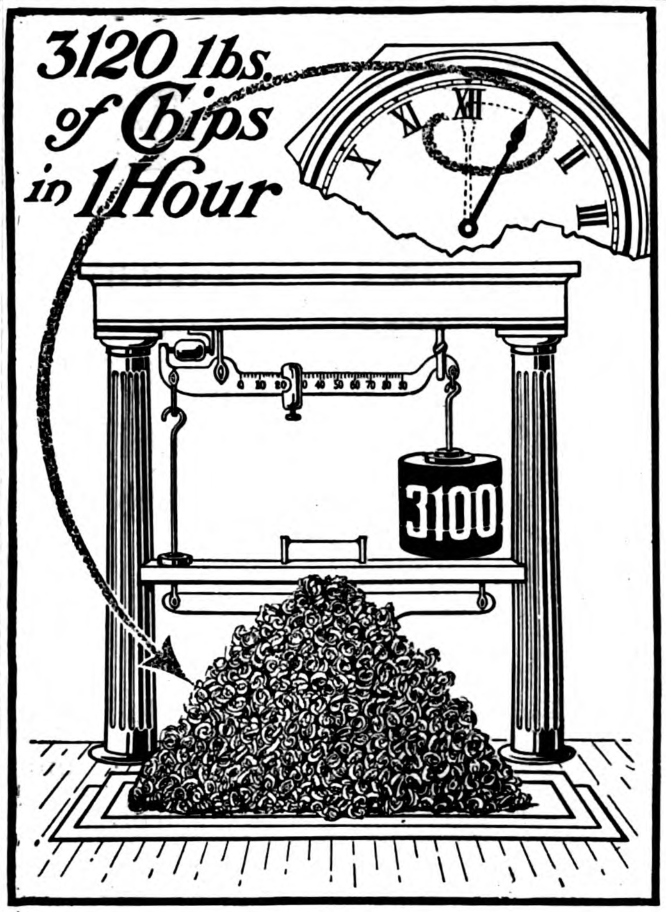

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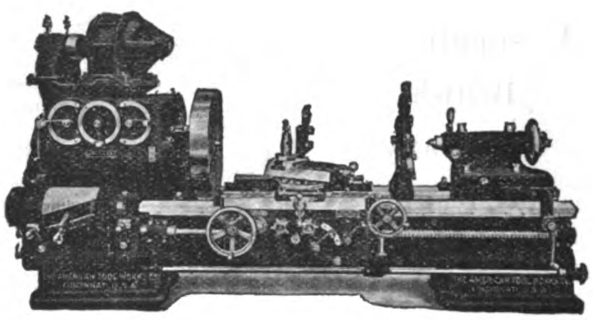

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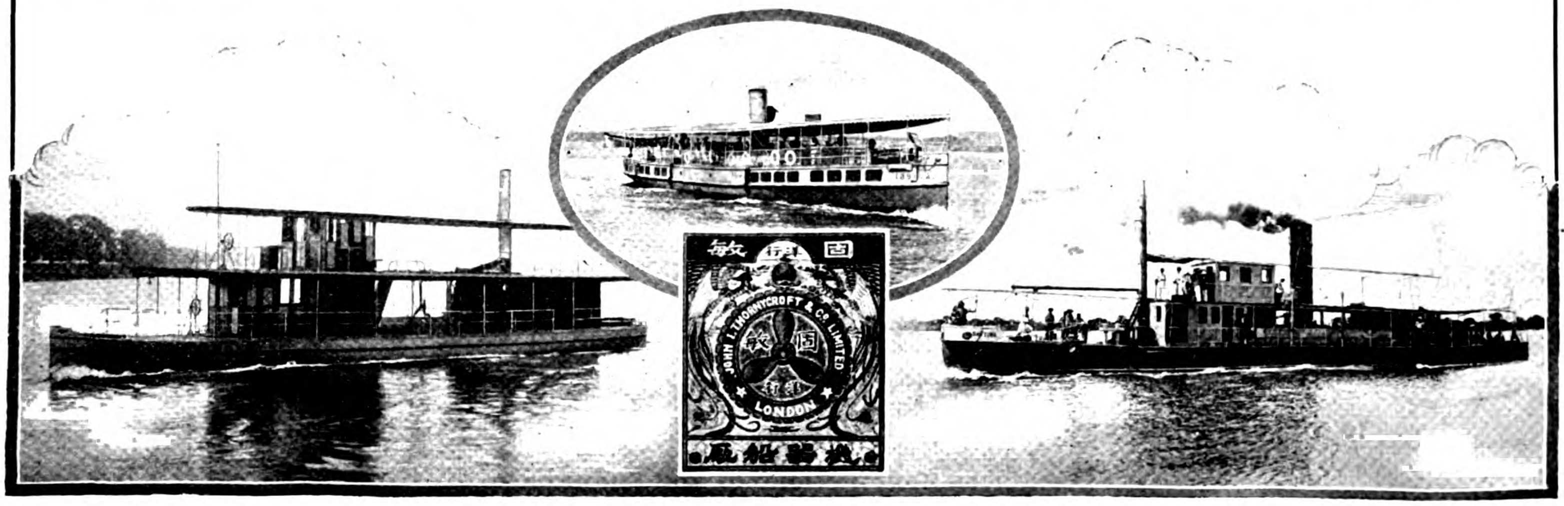

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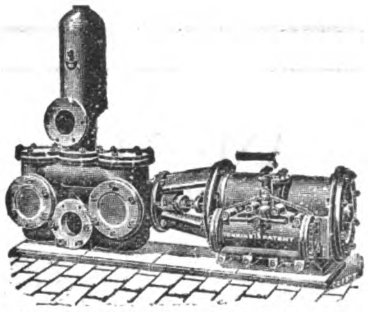
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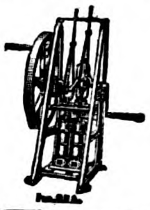

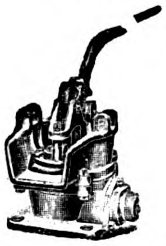

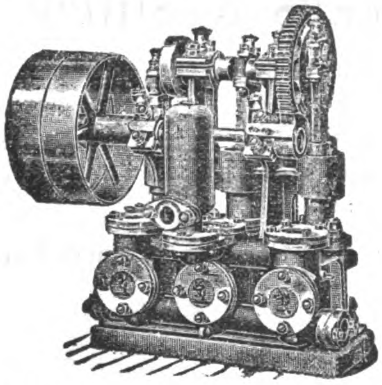

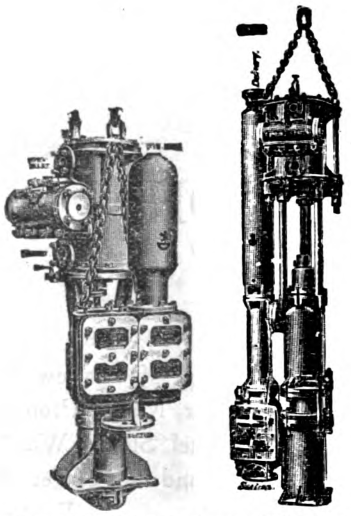
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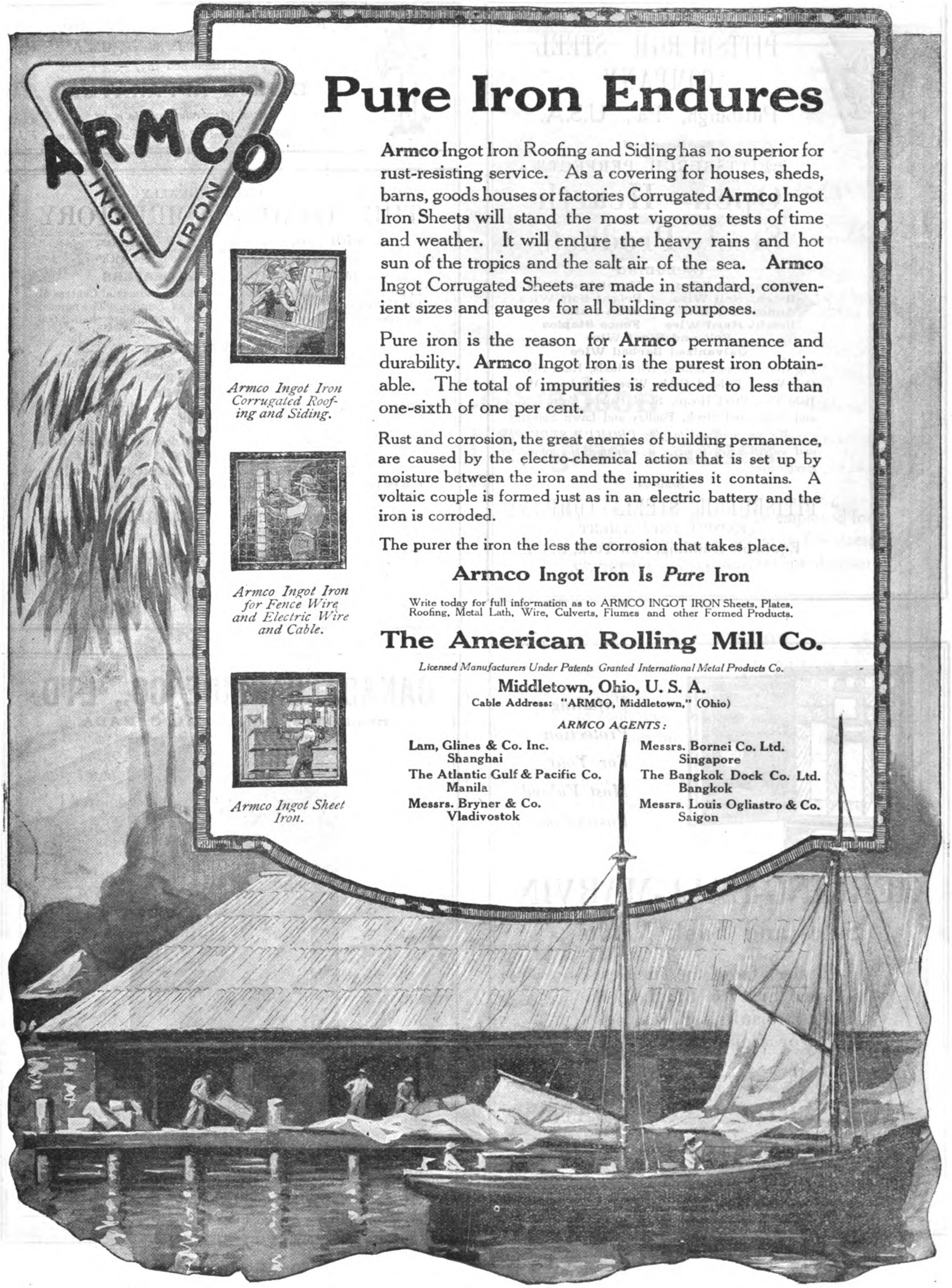
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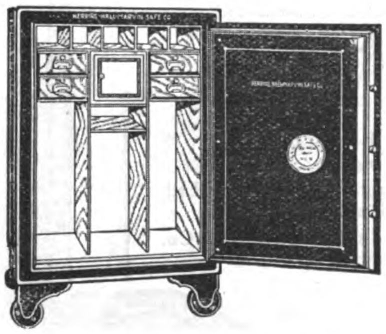

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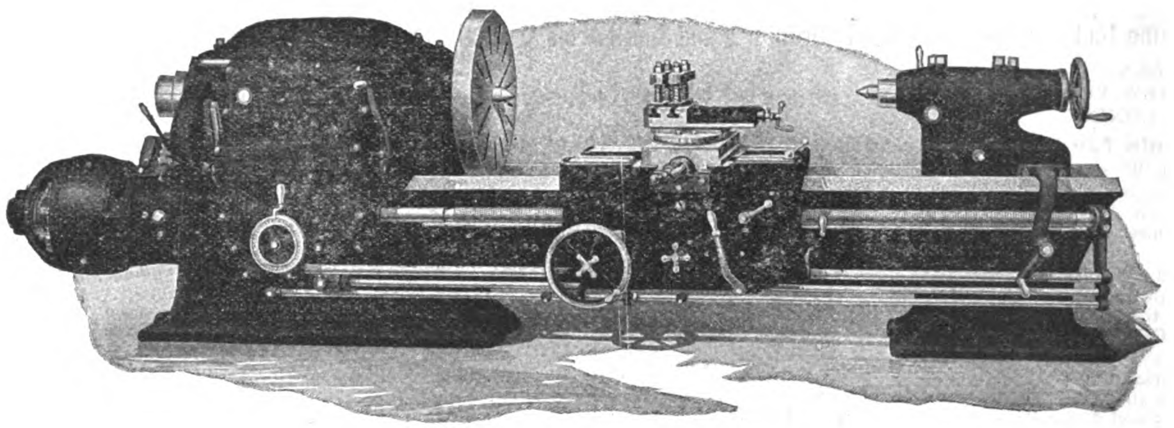

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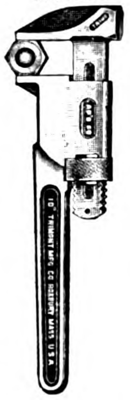

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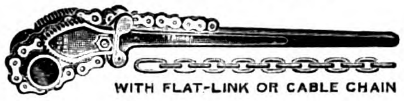

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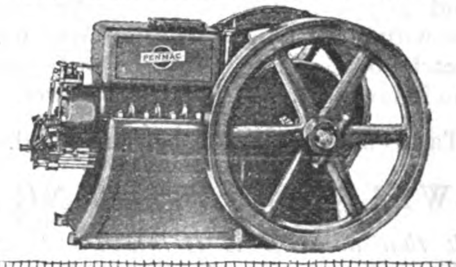

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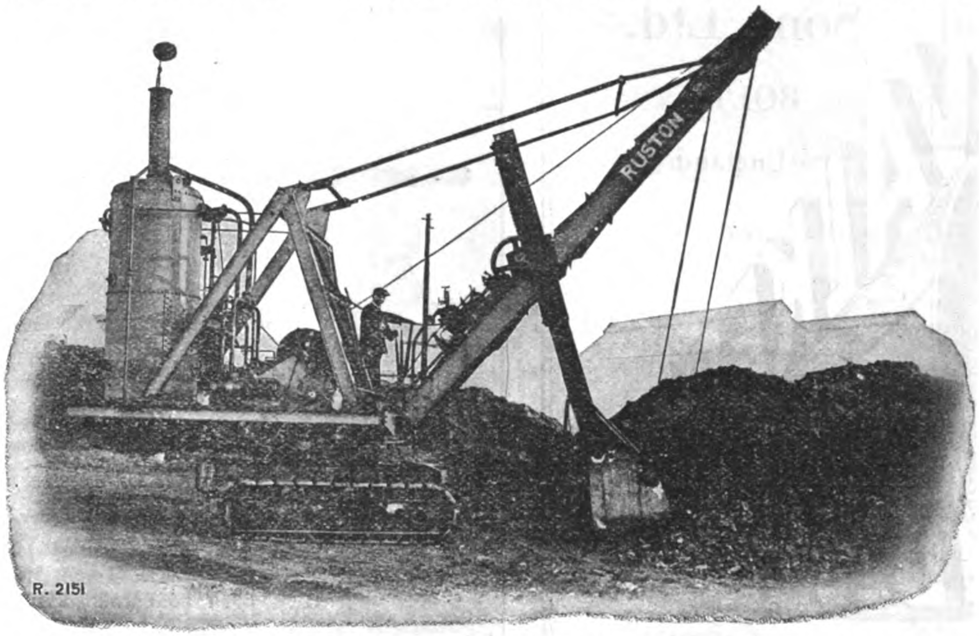

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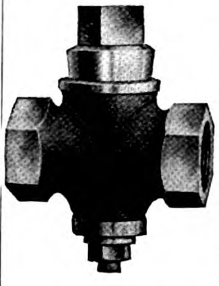

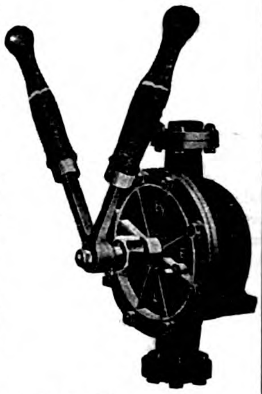

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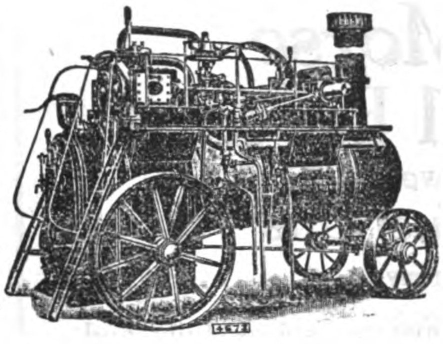

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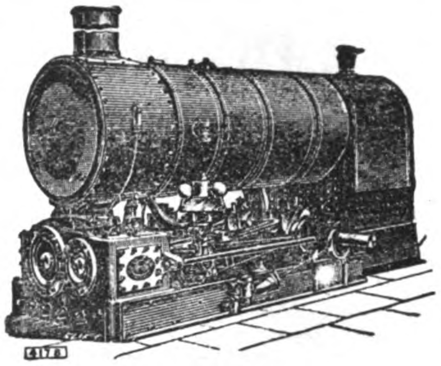

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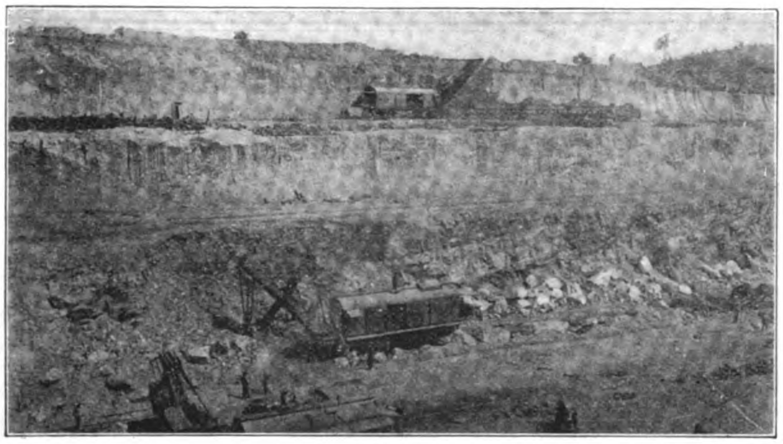

68-C Bucyrus steam shovels at work on copper deposits of the Union Miniere Du Haut Katanga, Africa

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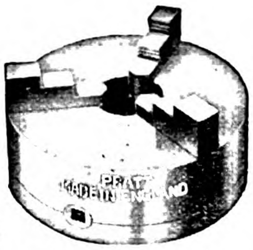

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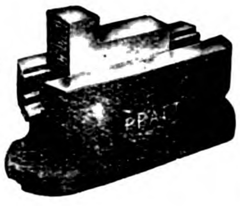

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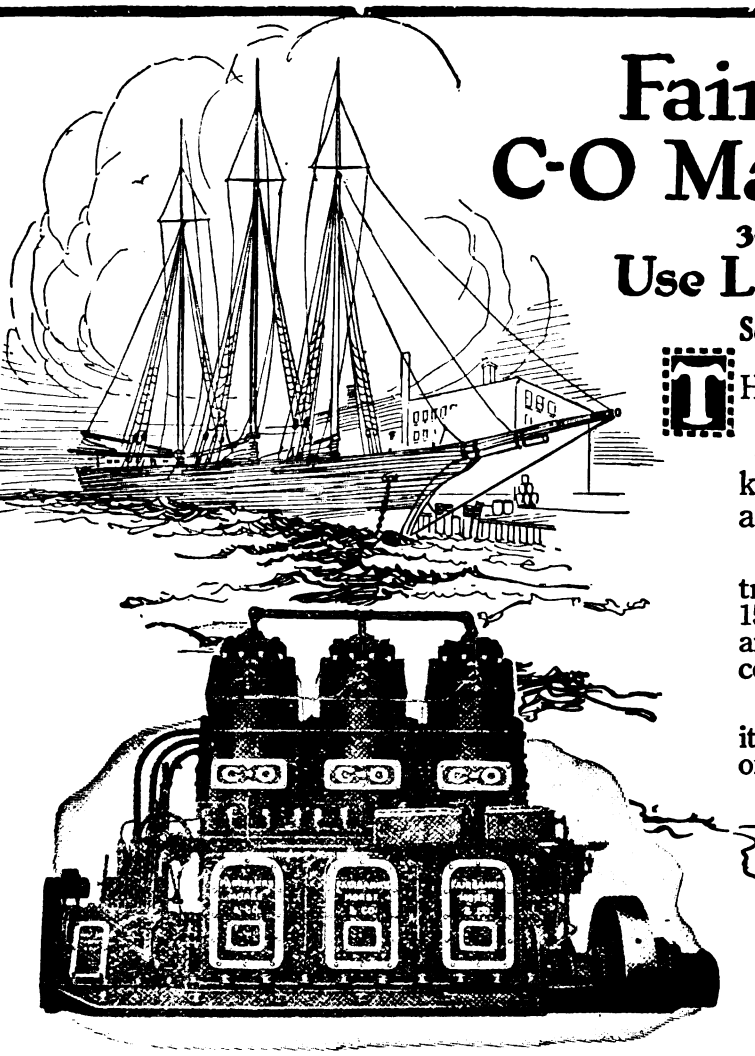

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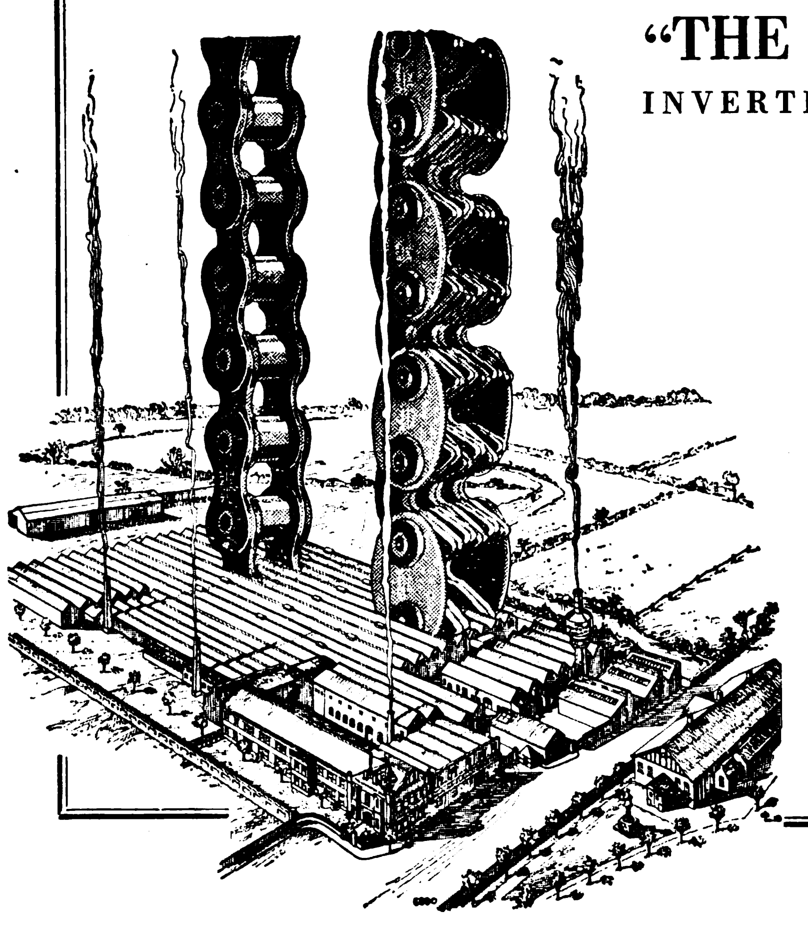

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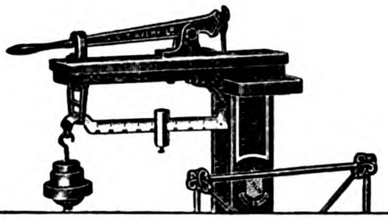

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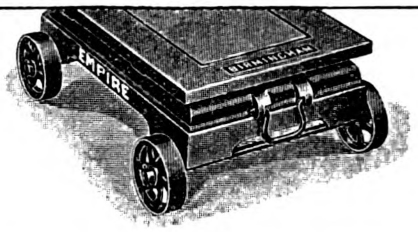

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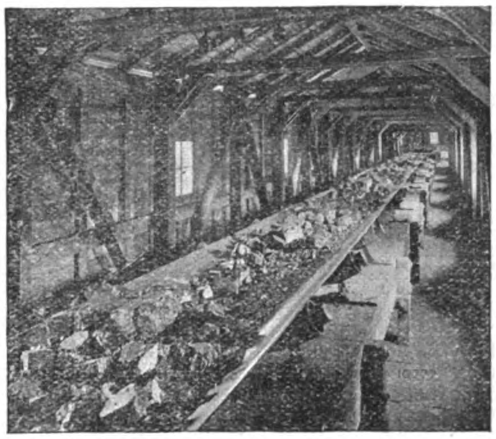

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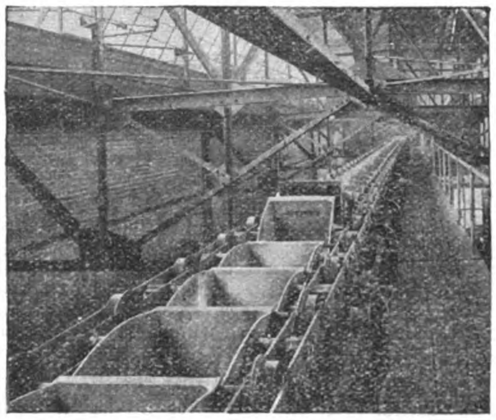

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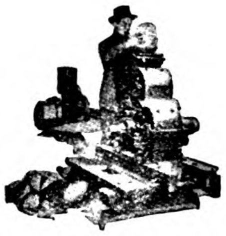

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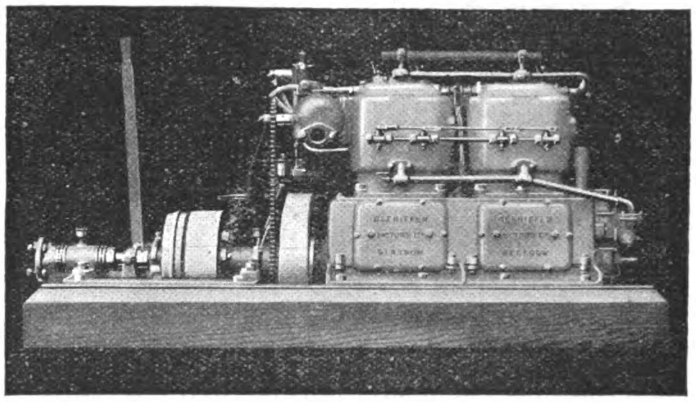

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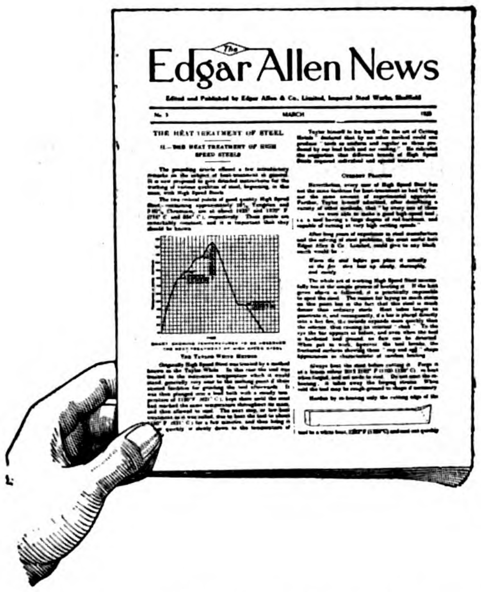

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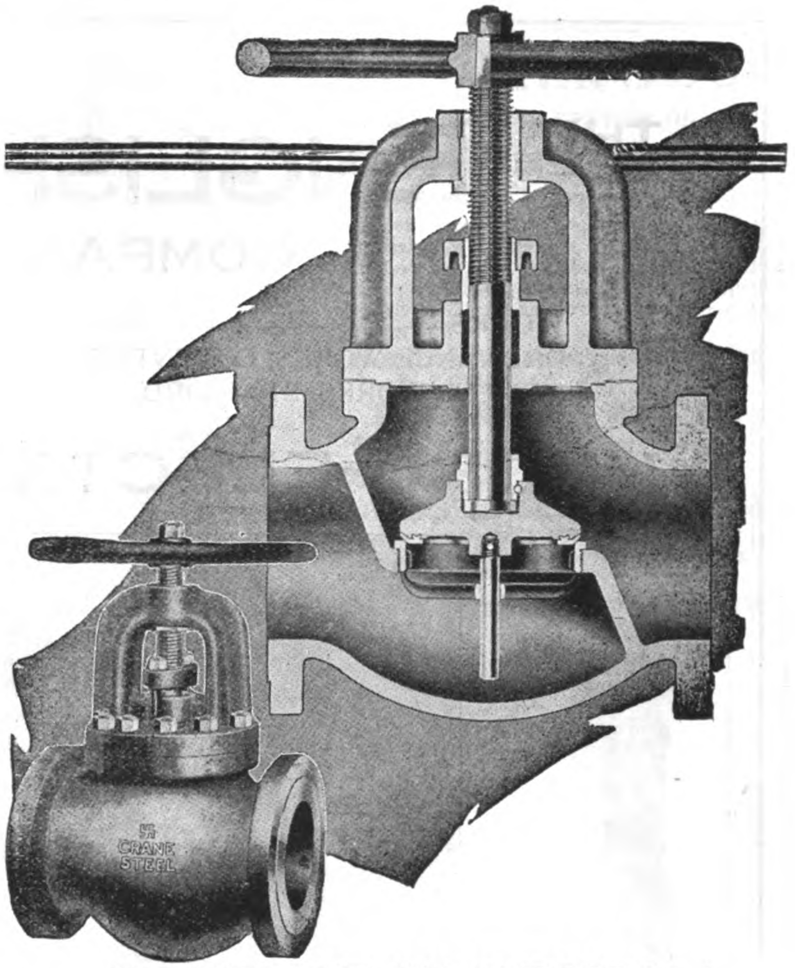

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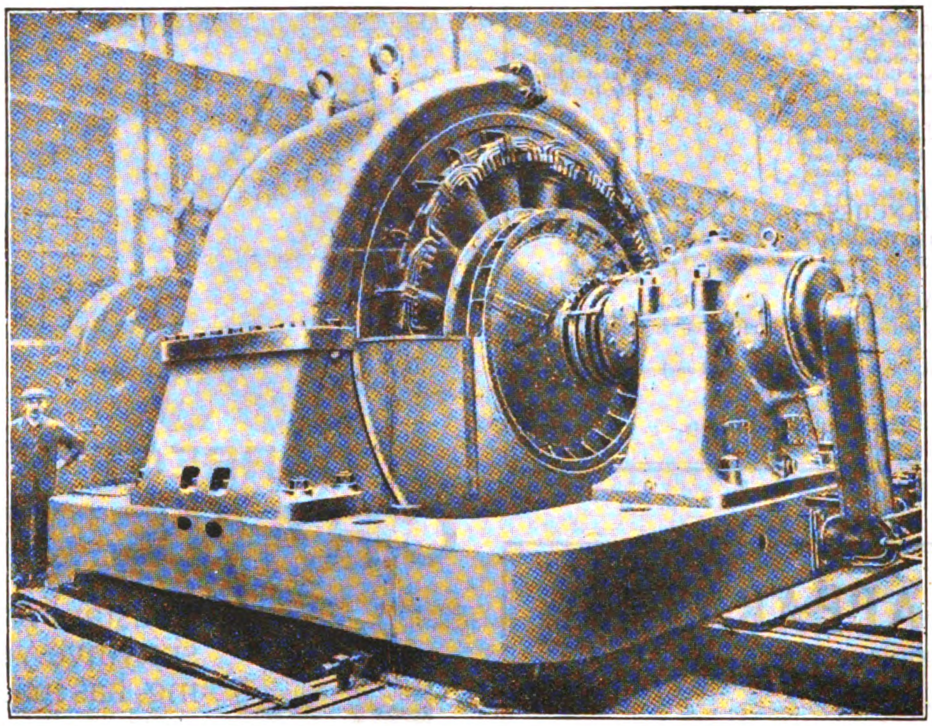

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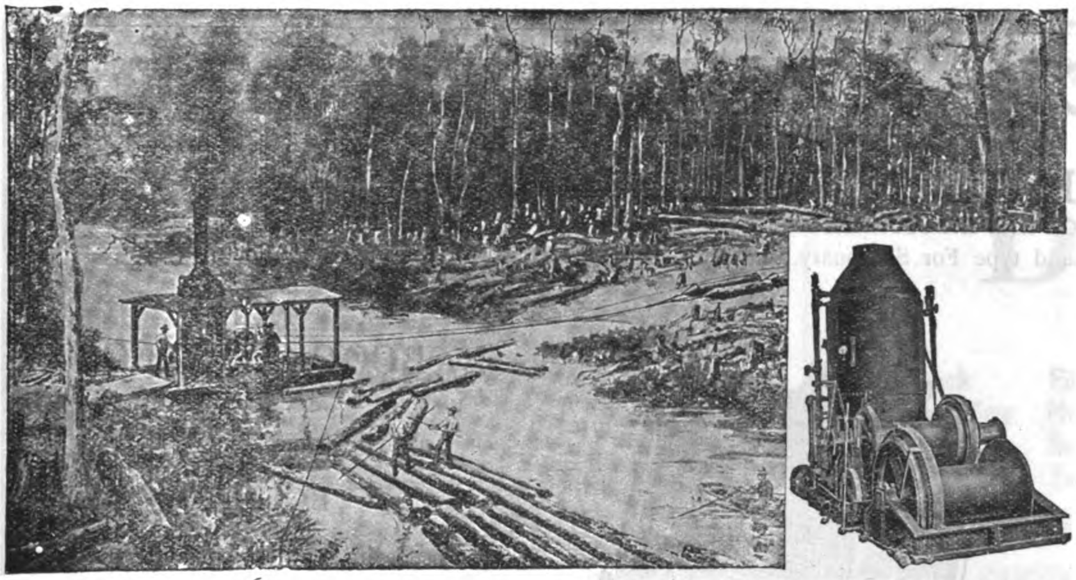

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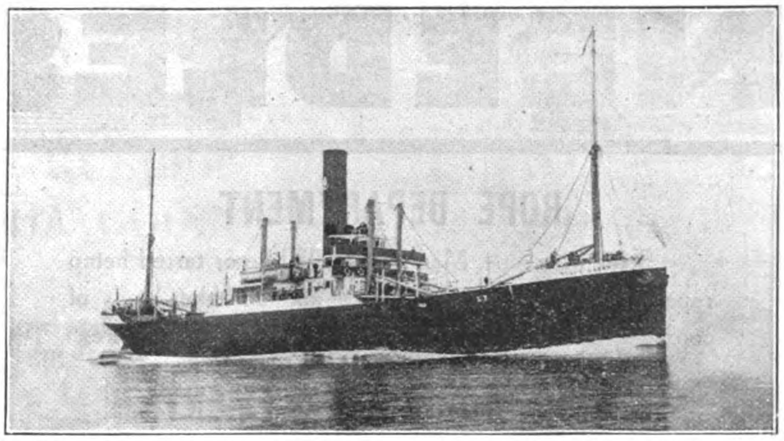

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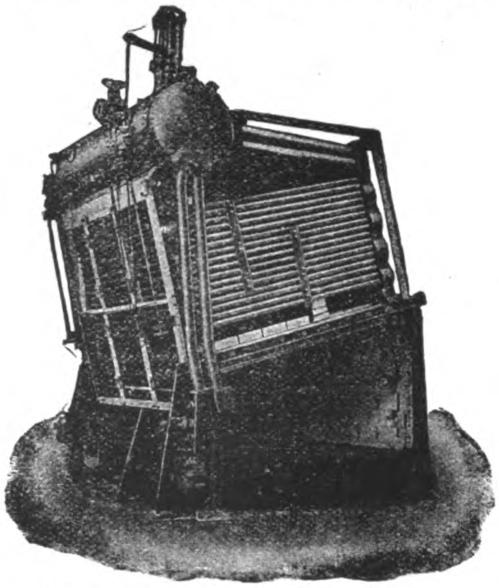

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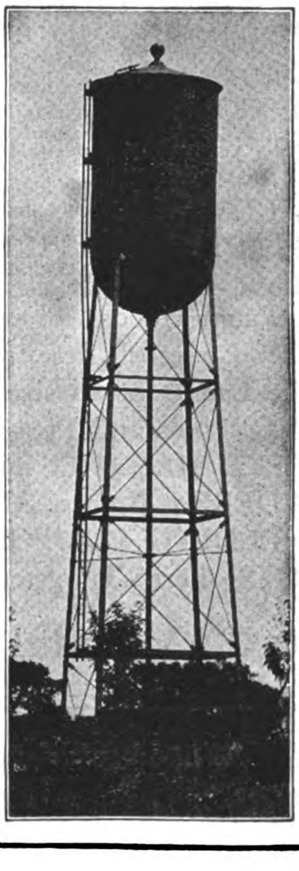

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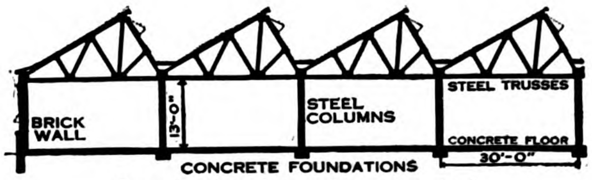

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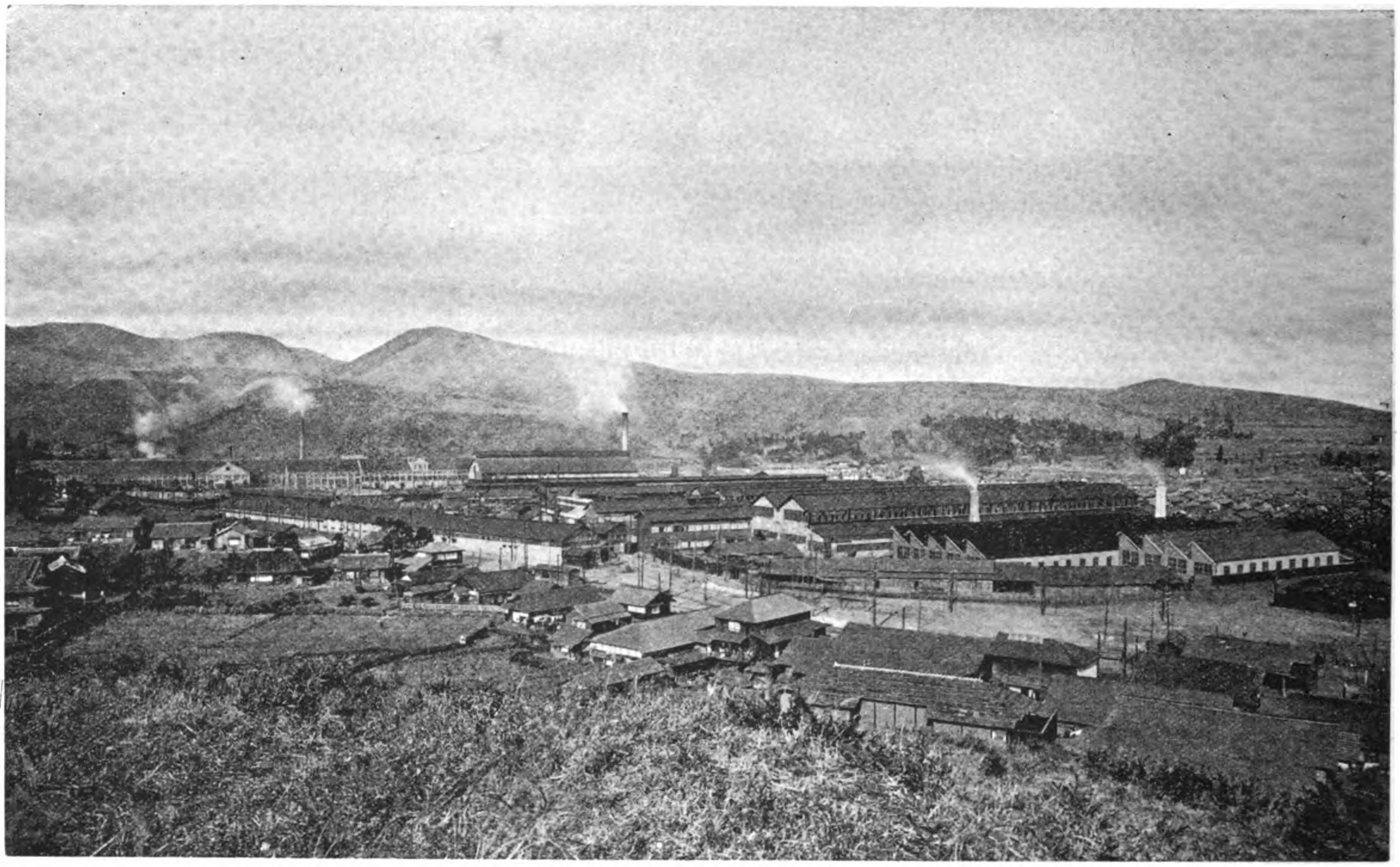

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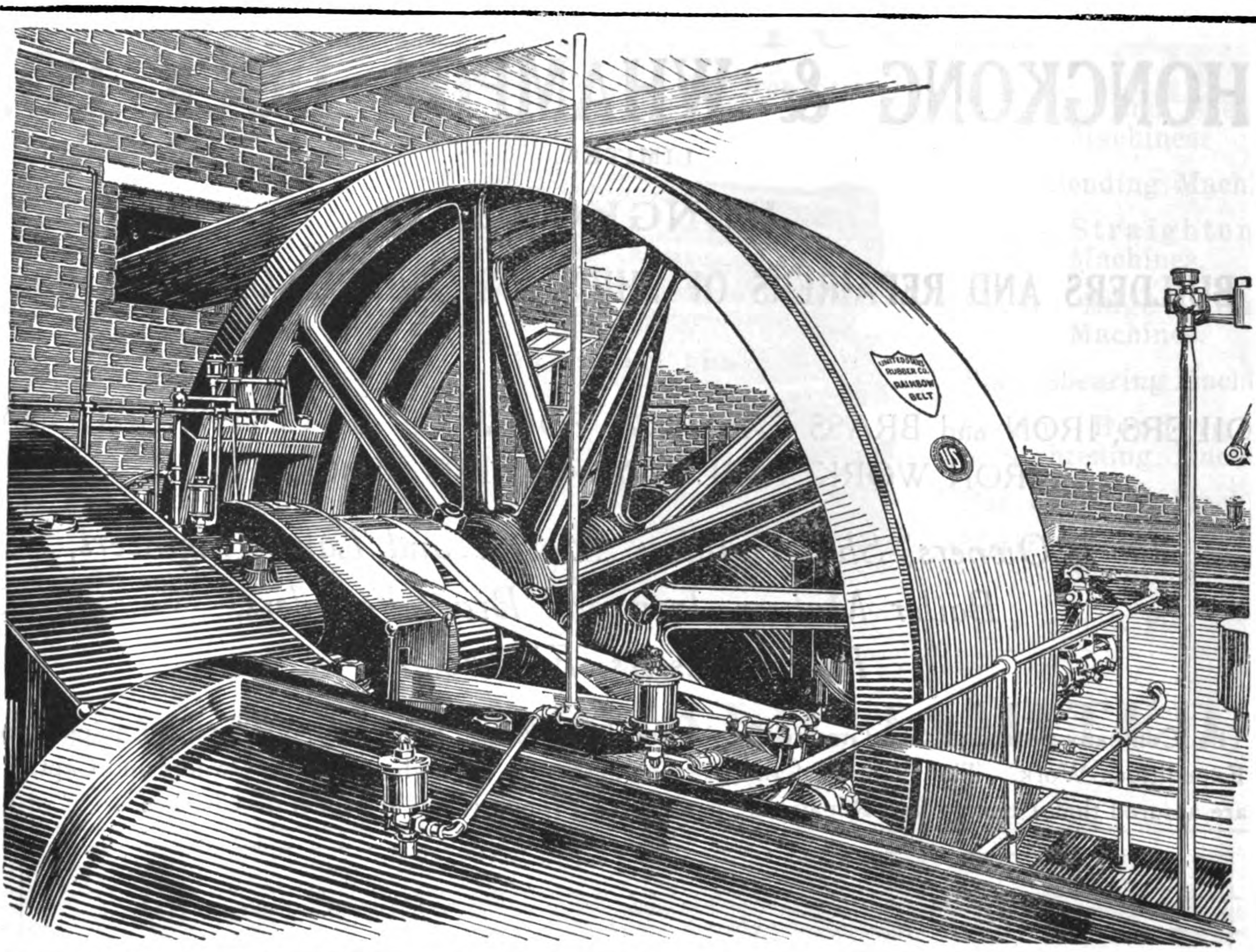

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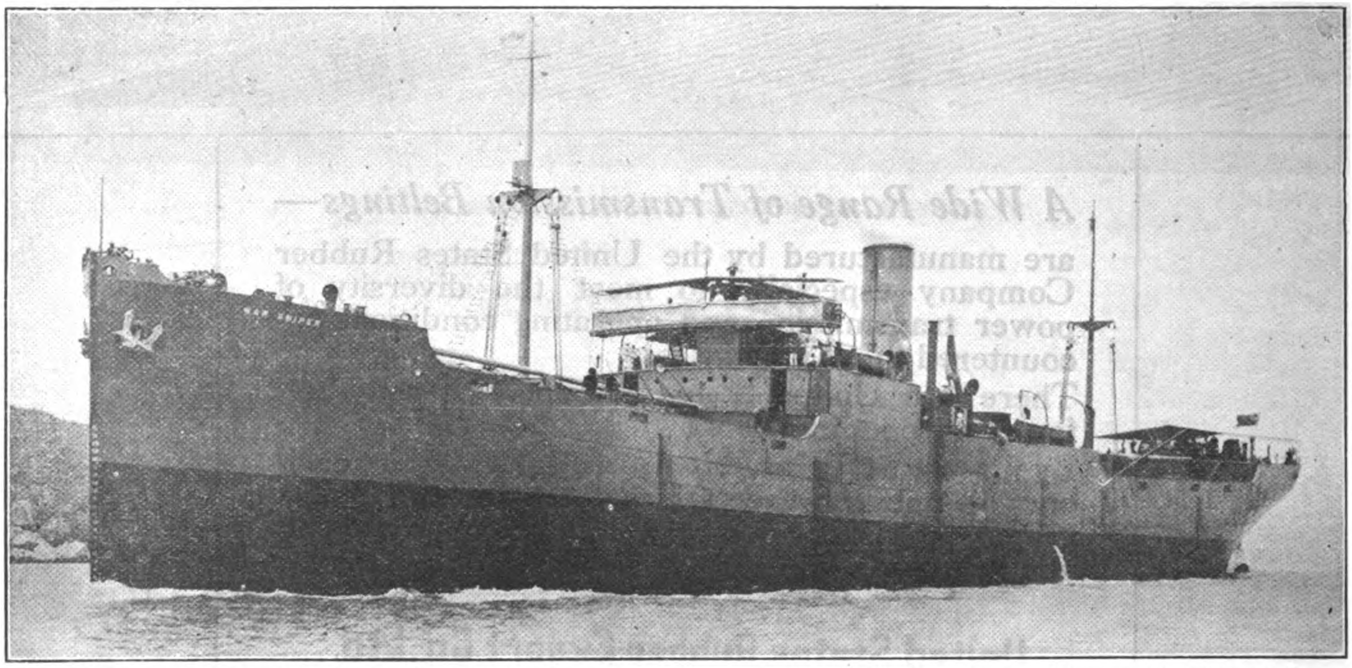

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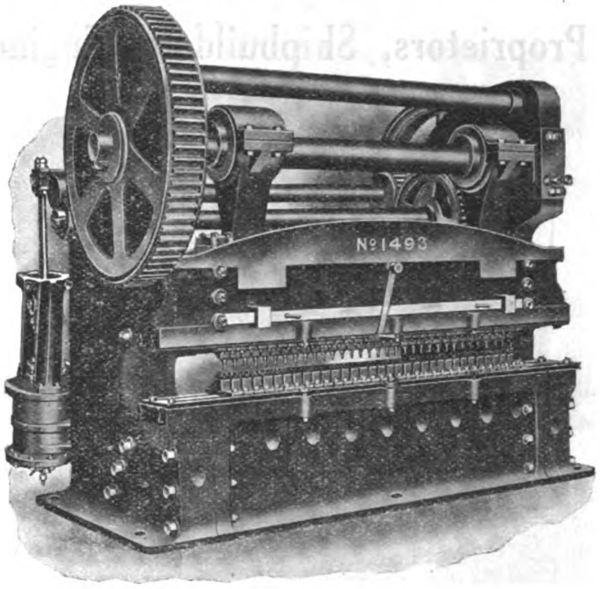

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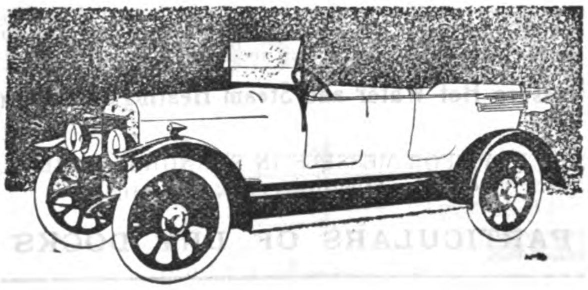

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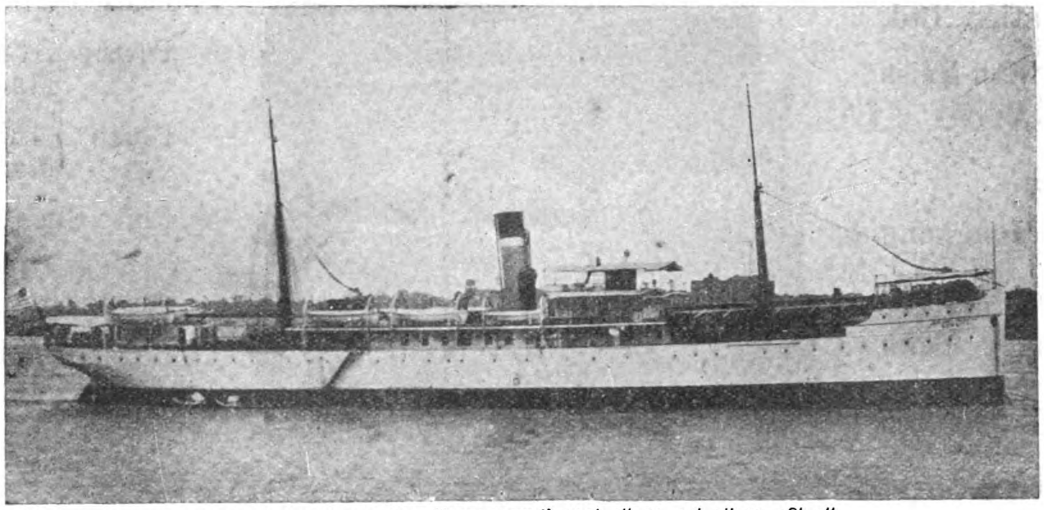

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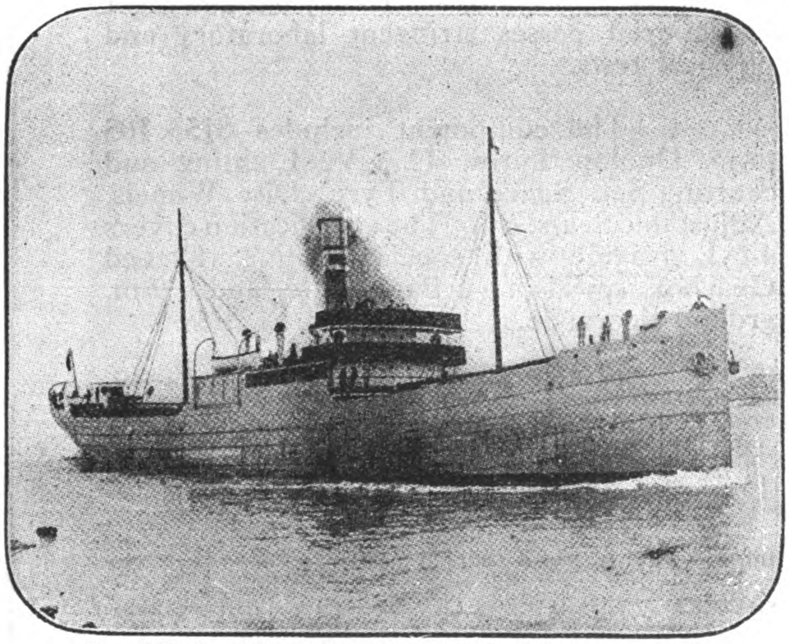

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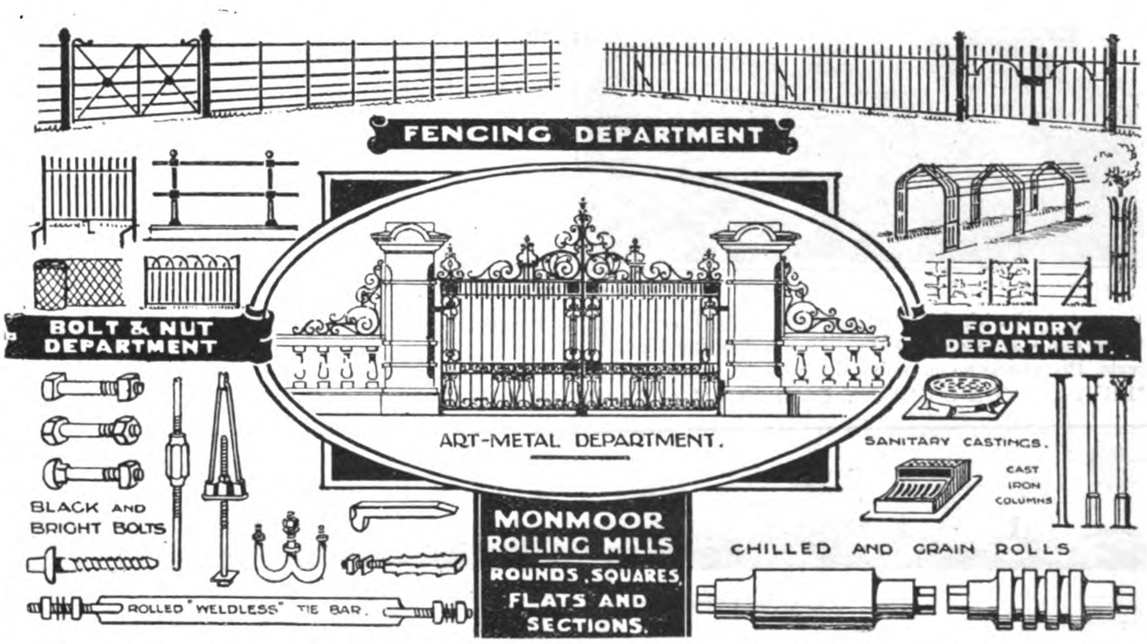

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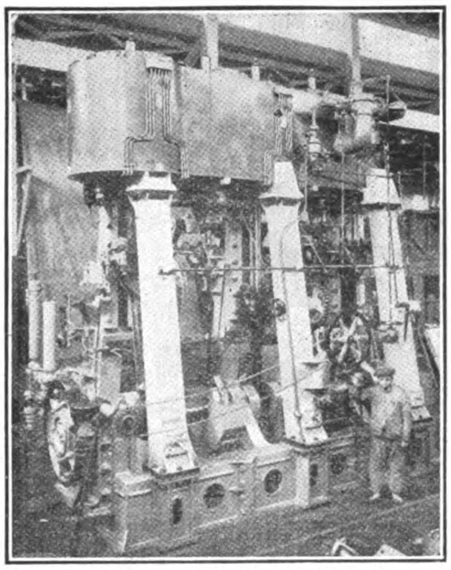

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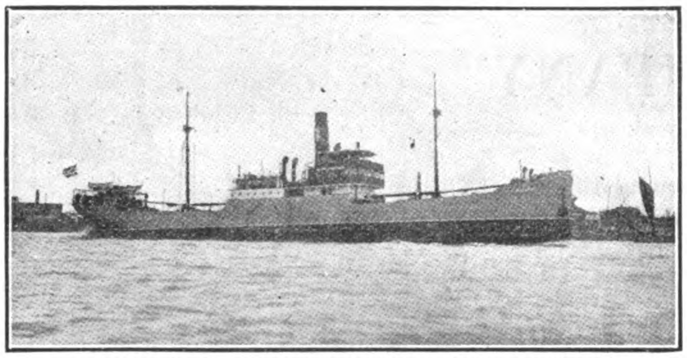

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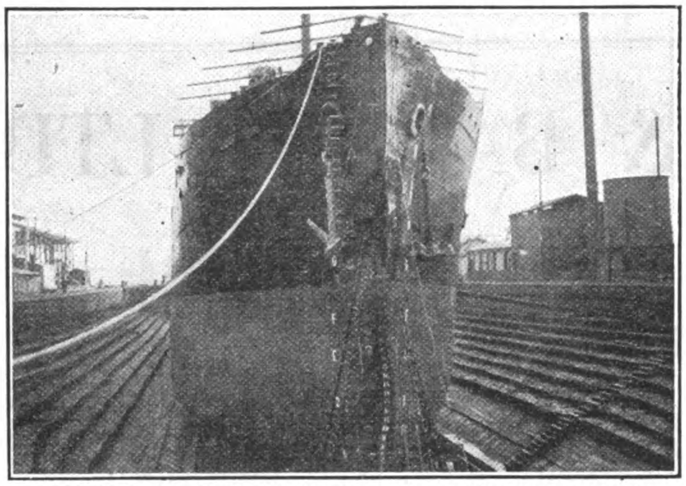

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Vessels undergoing repairs accommodated at wharves alongside Works.

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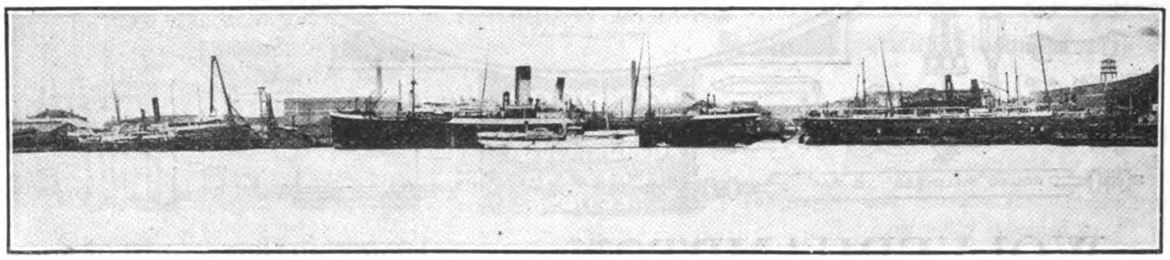
Salvage Experts, Divers and a comprehensive Salvage Plant. Floating Cranes to lift 50 tons and Sheerlegs to lift 80 tons.

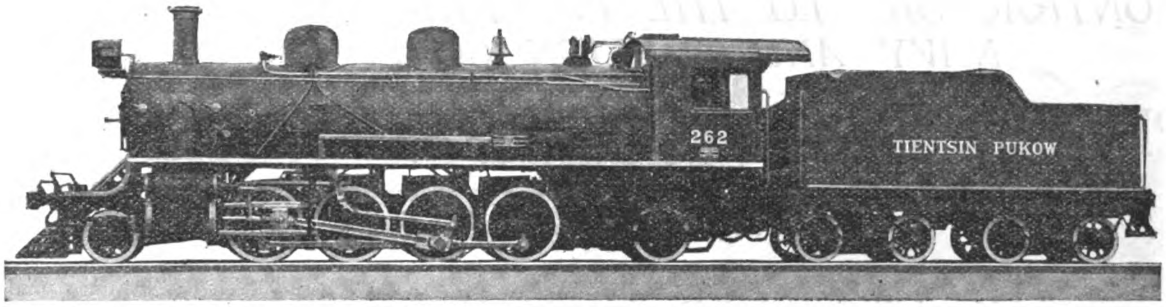
THE PROPERTY OF THE COMPANY COVERS AN AREA OF ABOUT 40 ACRES with a RIVER FRONTAGE of 1,800-ft.



General View of Works from River Side

Showing 8 Steamers Berthed Alongside Undergoing Repairs.

NEW POWER



BUILT FOR THE TIENTSIN-PUKOW RAILWAY

Total Weight of Engine, 198,000 pounds; Weight on Drivers, 142,500 pounds; Diameter of Drivers, 54 inches; Boiler Pressure, 200 pounds; Cylinders, 20 × 28 inches; Maximum Tractive Power, 35,300 pounds.

The Tientsin-Pukow Railway is a north-and-south line in China. The north-end at Tientsin connects with the Peking-Mukden line. The south-end terminates at Pukow, across the Yangtze River from Nanking, at which point ferry connection is made with the Shanghai-Nanking line. At Tsinanfu connection is made with the Shantung Railway, and at Hsuchowfu connection is made with the Pienlo System.

The distance from the central station at Tientsin to Pukow is 627 miles. In addition there are branches to mines and canals amounting to 60 miles.

Twenty Mikado type locomotives, above illustrated, were recently supplied by the American Locomotive Company. The design, representing the best American practice, was worked out in conjunction and cooperation with Mr. J. Alston, Locomotive Superintendent of the Railway.

AMERICAN LOCOMOTIVE SALES CORPORATION

Export Representatives in all Foreign Countries, except Canada

30 CHURCH STREET, NEW YORK, U. S. A.

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SHIPBUILDERS, ENGINEERS, BOILERMAKERS AND REPAIRERS

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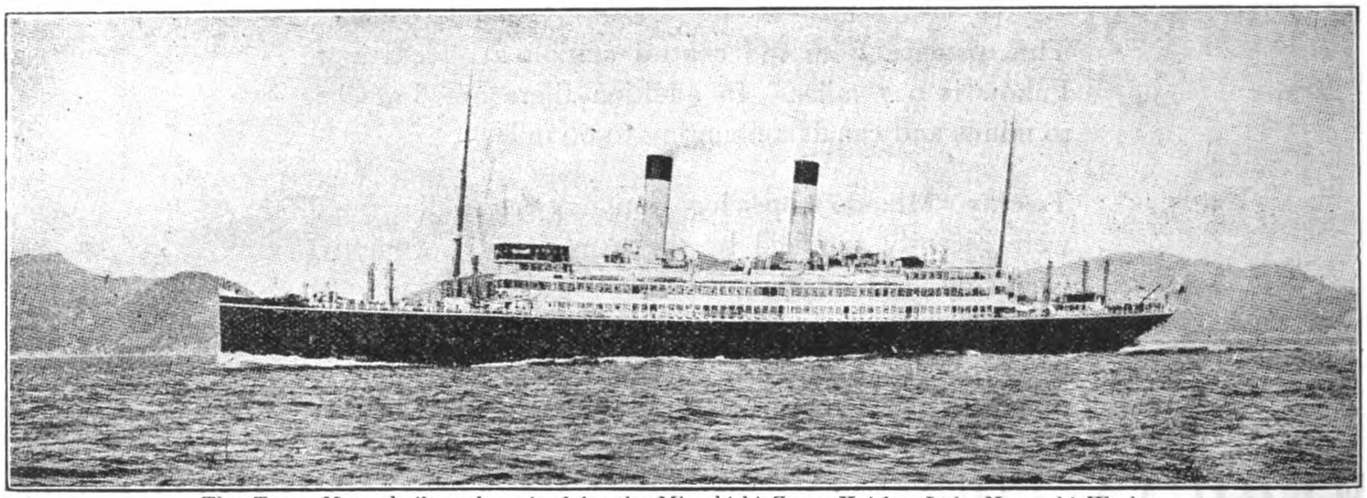

The *Tenyo Maru*, built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

MITSUBISHI ZOSEN KAISHA, LTD., NAGASAKI WORKS

(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

DOCK No. 1			DOCK No. 2			DOCK No. 3		
Extreme Length	523	Ft.	Extreme Length	371	Ft.	Extreme Length	728.9	Ft.
Length on Blocks	513	,,	Length on Blocks	350	,,	Length on Blocks	714	,,
Width of Entrance on Top	89	,,	Width of Entrance on Top	66	,,	Width of Entrance on Top	99½	,,
,, ,, ,, ,, Bottom	77	,,	,, ,, ,, ,, Bottom	53	,,	,, ,, ,, ,, Bottom	88½	,,
Water on Blocks at Spring Tide	26½	,,	Water on Blocks at Spring Tide	24	,,	Water on Blocks at Spring Tide	34½	,,

THE BEST EQUIPPED SHIPBUILDING PLANT IN THE FAR EAST

With Special Facilities for Handling the Heaviest Castings and the Repairing or Building of Ships, Engines, and Boilers
Also Electrical Work

LARGE STOCK OF MATERIAL AND FITTINGS ALWAYS ON HAND

HAULING AND WINDING PLANTS

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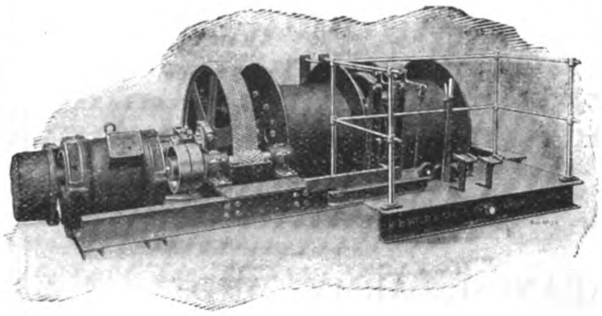

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EFFICIENCY,
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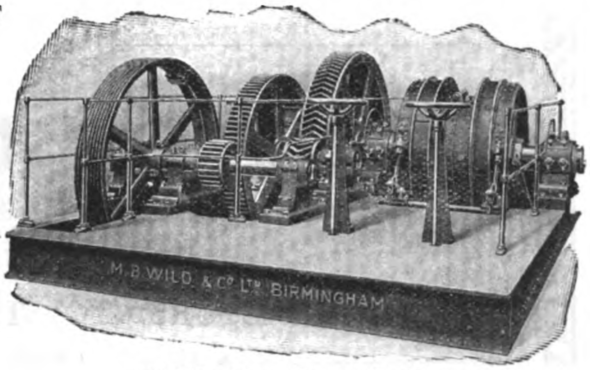

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Code Used:
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(Chairman.)

MANKICHI MIYAGAWA, Esq.
(Managing Business Dept.)

TAMATARO TOJO, Esq.
(Managing Shop Dept.)

DRY DOCKS:

No. 1	625′ × 80′ × 28′
No. 2	380′ × 50′ × 26′
No. 3	480′ × 63′ × 21½′

SHIPBUILDING BERTHS.

No. 1	400′ × 27′
No. 2	490′ × 30′
No. 3	580′ × 36′
No. 4 } No. 5 }	680′ × 38′

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Concrete Building	1,636.99
Brick Building	2,011.72
Others	5,807.74

All situated in Yokohama Harbour, the First Port at which Trans-Pacific Steamships arrive, and the Last Port from which they depart.

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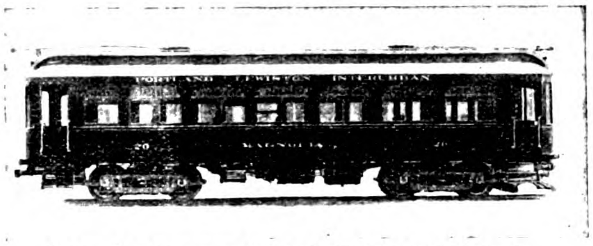

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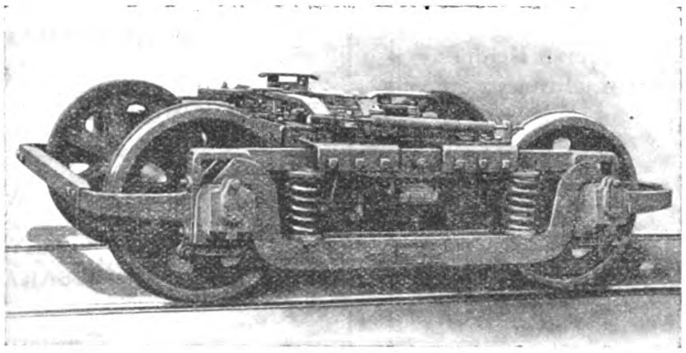

Type Truck—Brill No. 27 MCB1

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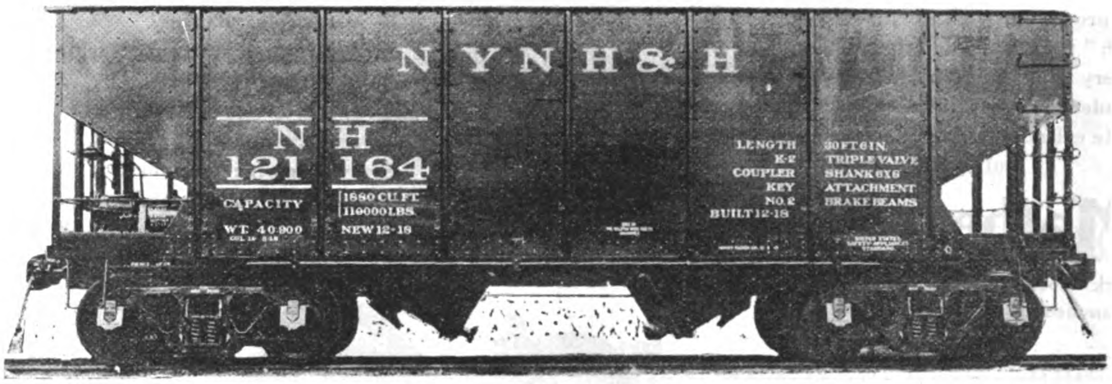

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General Managers of the

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YOKOHAMA

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WITH TWO BRANCHES IN TOKYO

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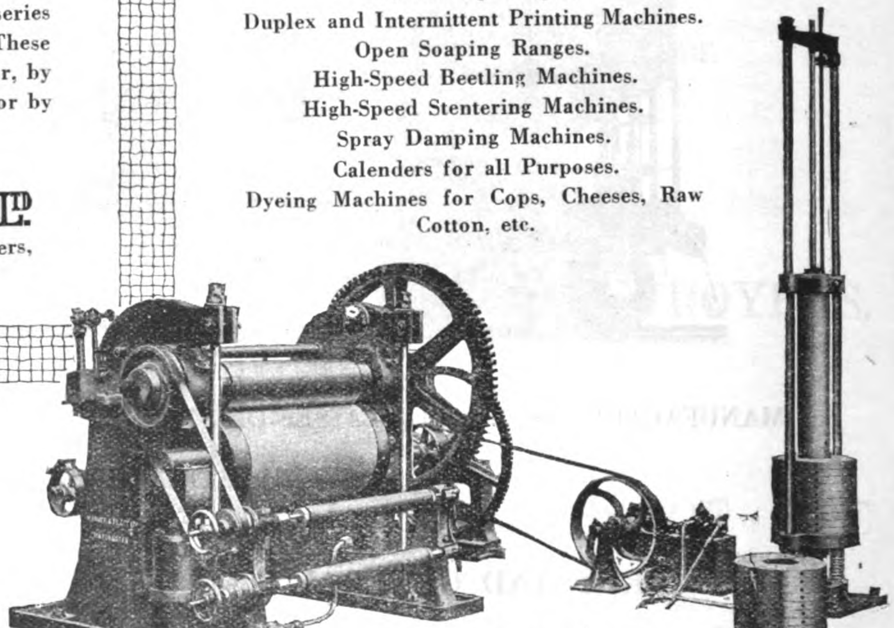
High-Speed Stentering Machines.
Spray Damping Machines.
Calenders for all Purposes.
Dyeing Machines for Cops, Cheeses, Raw Cotton, etc.



Two-bowl Hydraulic Lustring Calender.

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SHIPPING BROKERS

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WAREHOUSING AREA - - - - - - - - - 77,000 tsubo (308,000 Sq. yds.)
VALUE OF GOODS IN WAREHOUSE (latest date) - - - Yen 275,000,000
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President: TOKUEMON MITSUI
Managing Directors: S. YADA and H. OKUMURA
Directors: K. HAYASHI and K. FUKUI
Auditors: T. MITSUI and T. MAJIMA

HEAD OFFICE: No. 5 HONKAWAYA-CHO, NIHONBASHI-KU, TOKYO

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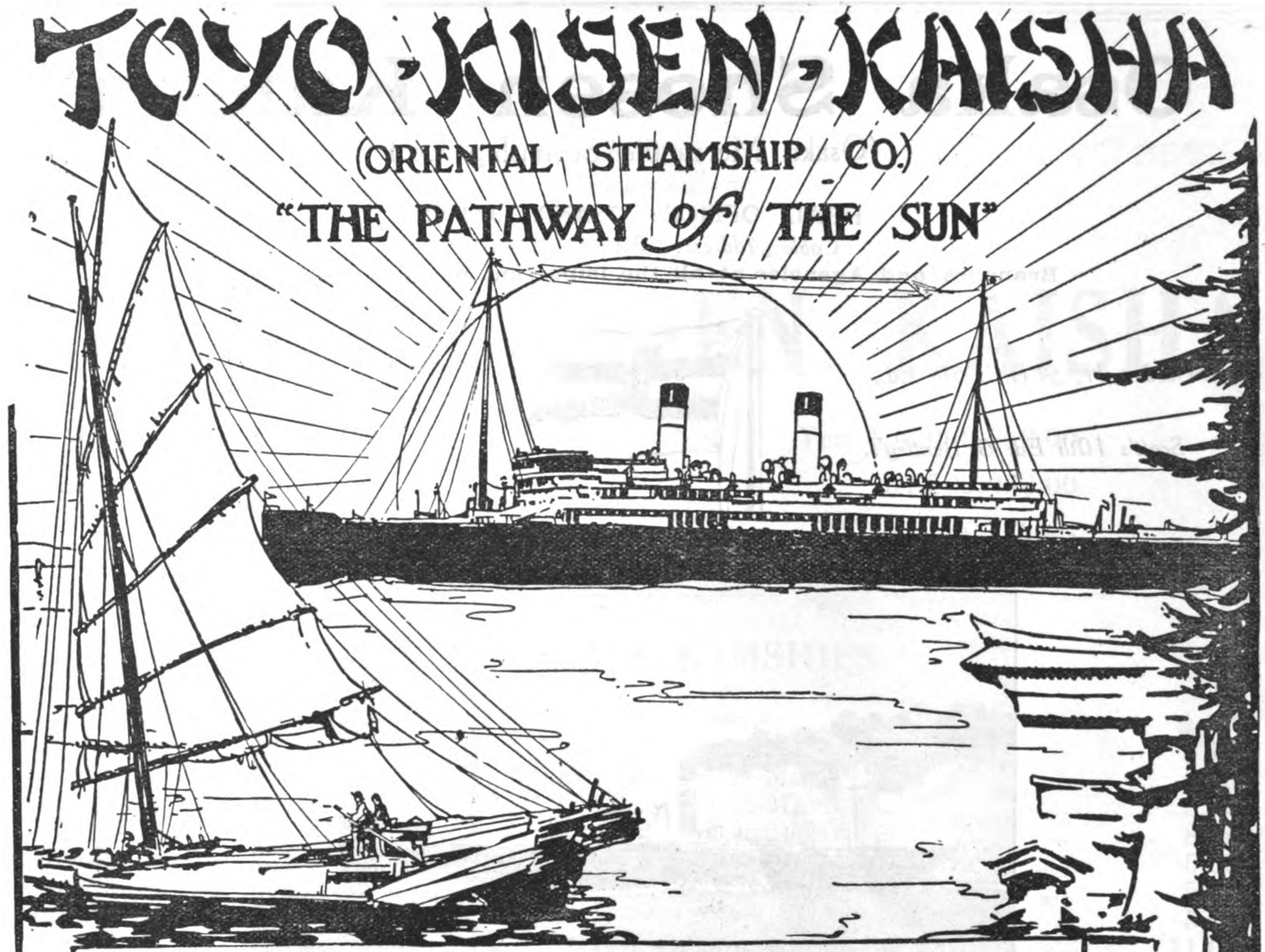

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S.S. "TENYO MARU" ,, ,, ,, May 10, 1921
S.S. "SHINYO MARU" sails for Orient, June 2, 1921
S.S. "KOREA MARU" ,, ,, ,, June 30, 1921

Sailings from Shanghai

S.S. "SIBERIA MARU" sails for San F'cisco, Mar. 22, 1921
S.S. "TENYO MARU" ,, ,, ,, ,, Apr. 6, 1921
S.S. "SHINYO MARU" sails for San F'cisco, Apr. 30, 1921
S.S. "KOREA MARU" ,, ,, ,, ,, May 28, 1921

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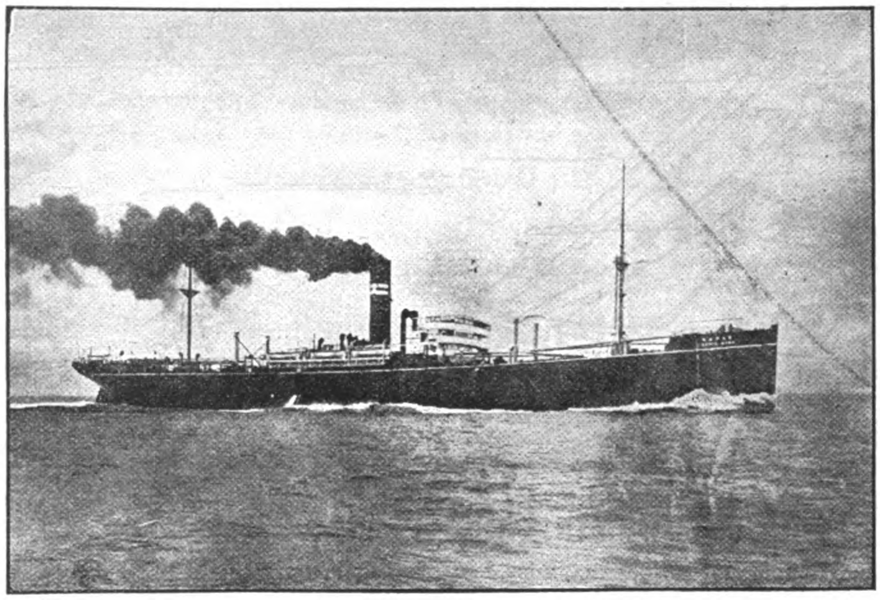

PRINCIPAL REGULAR LINES:

JAPAN-EUROPE LINE (via Suez)—Monthly—Ports of Call: Yokohama, Kobe, Moji, Shanghai, Hongkong, Singapore, Colombo, Port Said, Marseilles, London, Antwerp, Rotterdam and Hamburg.

JAVA-EUROPE LINE:—Monthly—Ports of Call: Sourabaya, Padan, Colombo, Port Sudan, Suez, Genoa, Marseilles, Antwerp and Hamburg.

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SINGAPORE-NEW YORK LINE:—Monthly—Ports of Call: Singapore, Hongkong, Shanghai, Moji, Kobe, Yokohama, San Francisco, Balboa, Cristbal, Havana and New York.

JAPAN-BOMBAY LINE:—Fortnightly—Ports of Call: Yokohama, Yokkaichi, Osaka, Kobe, Moji, Hongkong, Singapore, Colombo and Bombay.

HONGKONG-PUGET SOUND LINE:—Fortnightly—Ports of Call: Hongkong, Manila, Keelung, Shanghai, Nagasaki, Kobe, Yokkaichi, Shimizu, Yokohama, Victoria, Seattle, Tacoma and Vancouver.

JAPAN-SOUTH AMERICA LINE:—Monthly—Ports of Call: Yokohama, Kobe, Nagasaki, Hongkong, Singapore, Colombo, Mauritius, Durban, Cape Town, Rio de Janeiro, Santos and Buenos Ayres.

JAPAN-AUSTRALIA LINE:—Monthly—Ports of Call: Yokohama, Kobe, Osaka, Moji, Hongkong, Manila, Sydney, Melbourne and Adelaide.

JAPAN-JAVA LINE:—Monthly—Ports of Call: Osaka, Kobe, Moji, Keelung, Manila, Sandakan, Tawao, Batavia, Sourabaya and Macassar.

SERVICES TO CHINA.—

OSAKA—Dairen Line.—Semi-Weekly.
OSAKA—Tientsin Line.—6 Sailings per month.
OSAKA—Tsingtau Line.—2 Sailings per month.
YOKOHAMA—Dairen-Tientsin Line.—About 8 Sailings per month.
TAKAO—Tientsin Line.—2 Sailings per month.
Keelung-Hongkong Line.—Weekly.

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KOKUSAI KISEN KAISHA

Nominal Capital	- -	Yen 100,000,000.00
Paid-up Capital	- -	,, 87,500,000.00
Aggregate Tonnage	- - -	500,000 Tons

FLEET OF STEAMSHIPS

Name	Tons D.W.	Name	Tons D.W.
Rozan-Maru	8,700	Seifuku-Maru	9,100
Vancouver-Maru	9,100	Suez-Maru	6,600
Boston-Maru	8,800	Daio-Maru	9,000
Tofuku-Maru	9,100	Kashu-Maru	8,800
Chifuku-Maru	9,100	No. 2 Kifunesan-Maru	5,000
Ryufuku-Maru	9,100	Yousan-Maru	5,000
Hankow-Maru	6,400	Taisan-Maru	5,000
Yoni-Maru	11,000	Yuri-Maru	11,000
Taibu-Maru	8,900	Texas-Maru	11,000
San Francisco-Maru	9,100	Tamatsu-Maru	6,600
Naple-Maru	9,100	Eifuku-Maru	9,100
Glasgow-Maru	9,100	Kifuku-Maru	9,100
Yayoi-Maru	8,700	Toyofuku-Maru	9,000
Yaye-Maru	11,000	Raifuku-Maru	9,100
Malta-Maru	8,700	Keifuku-Maru	9,100
Buyo-Maru	8,800	Washington-Maru	9,100
Brazil-Maru	9,100	Tokufuku-Maru	9,100
Kofuku-Maru	9,100	Portland-Maru	9,100
Yezari-Maru	6,900	England-Maru	9,100
Yugao-Maru	5,000	Chili-Maru	9,100
Yubaye-Maru	5,000	Argentine-Maru	9,100
Sydney-Maru	6,400	Port Said-Maru	9,100
Shanghai-Maru	6,400	New York-Maru	9,100
Singapore-Maru	9,100	Karorin-Maru	6,400
Jyufuku-Maru	9,100	Tasmania-Maru	6,400
Hiyeizan-Maru	6,700		

Head Office: No. 8 Kaigan-dori, Kobe

BRANCH OFFICE:

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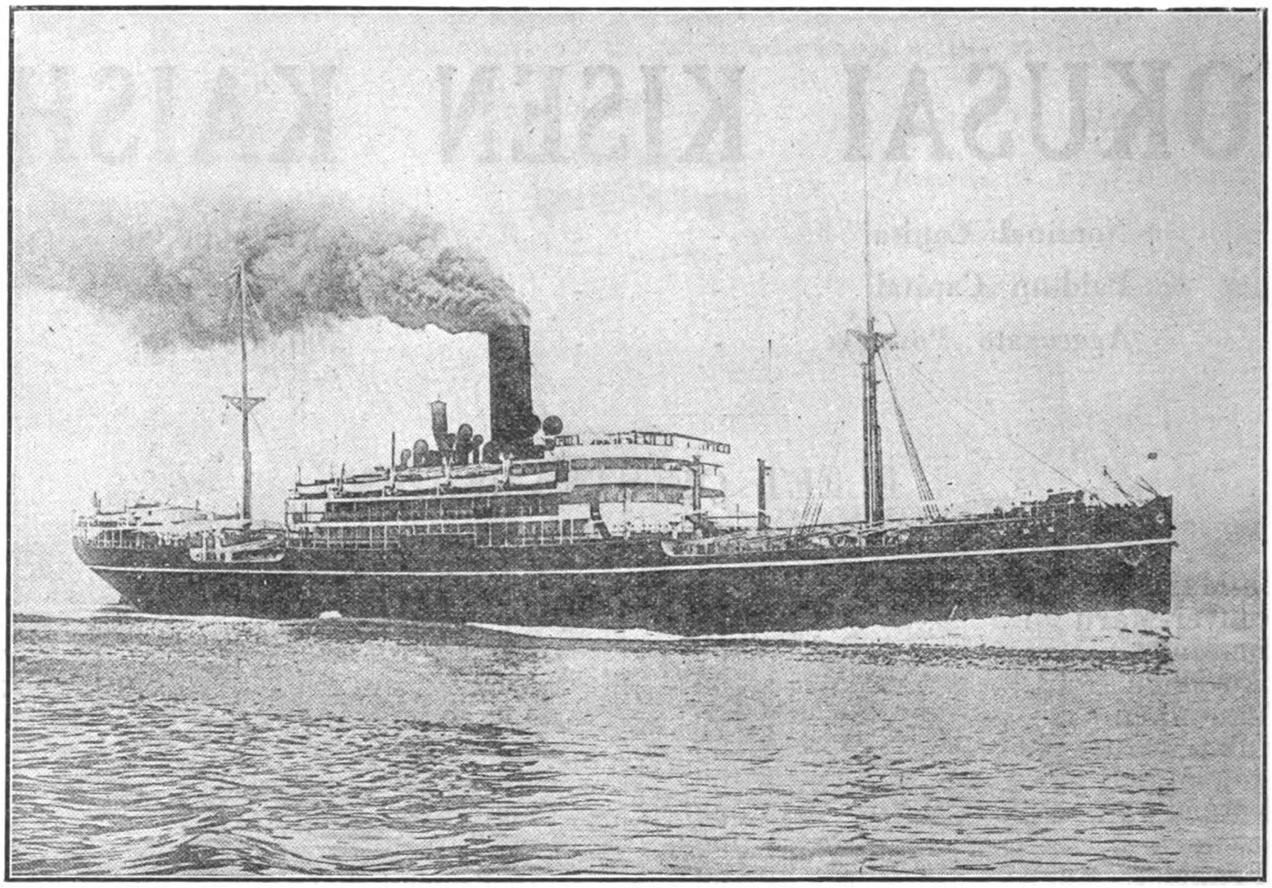
NIPPON YUSEN KAISHA



PRINCIPAL LINES:

EUROPEAN LINE—Fortnightly

LIVERPOOL LINE—Every 4 weeks

HAMBURG LINE—Every 4 weeks

SEATTLE LINE—Twice a month

NEW YORK LINE (via Panama)—Every 4 weeks

SOUTH AMERICAN LINE—Once every 2 months

AUSTRALIAN LINE—Monthly

CALCUTTA LINE—Fortnightly

CALCUTTA-NEW YORK LINE—Monthly

BOMBAY LINE—Fortnightly

JAPAN-JAVA-CALCUTTA LINE—Monthly

SHANGHAI LINE—3 times a week

NORTH CHINA LINE—9 times a month

SOUTH SEA ISLANDS LINE—Semi-monthly

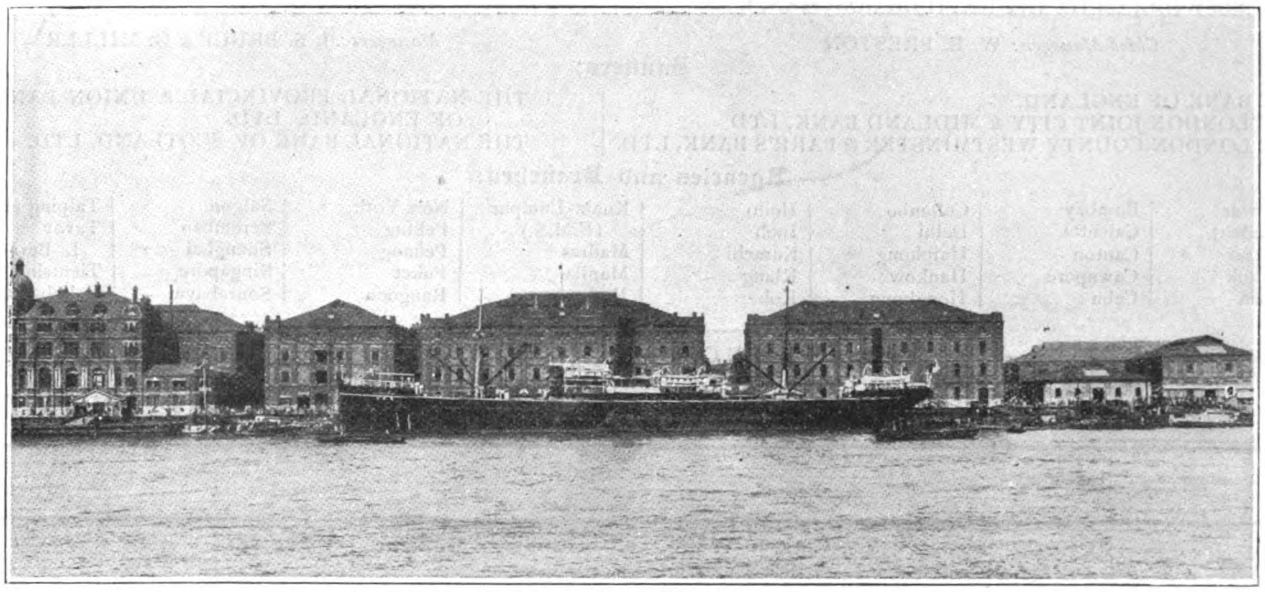
In addition to the above, numerous lines are also operated to principal Ports throughout the world.

NIPPON YUSEN KAISHA

(JAPAN MAIL STEAMSHIP CO.)

Fleet 100 Vessels — Gross Tonnage 500,000

Head Office: TOKIO, JAPAN



SHANGHAI OFFICE, WHARF AND GODOWNS.

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Kobe	Moji	Nagasaki	Hankow
Hakodate	Otaru	Tientsin	Singapore
Tsingtao	Hongkong	Canton	Bombay
Penang	Colombo	Calcutta	Liverpool
Port Said	Marseilles	London	Chicago
Antwerp	Rotterdam	New York	Brisbane
Seattle	Manila	Townsville	
Sydney	Melbourne	Osaka	

SHANGHAI BRANCH:

3 NORTH YANGTSZE ROAD

I. MATSUDAIRA, *Manager*

Branches and Agencies at all the Principal Ports of the World.

Chartered Bank of India, Australia and China

INCORPORATED BY ROYAL CHARTER, 1853

Capital £3,000,000
Reserve Fund £3,500,000
Reserve Liabilities of Shareholders . £3,000,000

Head Office: 38 BISHOPSGATE, LONDON, E.C.
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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVII SHANGHAI, APRIL, 1921 No. 4

THE KEYS OF THE WORLD

Can an Independent Filipino Republic Guarantee its Neutrality?

By George Bronson Rea

THE Filipinos are again clamoring for immediate independence, "with, or without strings." They don't care how they get it, and to this end their legislature has voted a fund of 1,000,000 pesos to conduct a continuous propaganda to remind America of its promises. Let us go back and refresh our memory as to just what we have pledged ourselves to do for the Filipinos.

President McKinley told us that:

"The Philippines are ours, not to exploit, but to develop, to educate, to train in the science of self-government. This is the path of duty which we must follow or be recreant to a mighty trust committed to us."

President Roosevelt emphasized this by saying:

"If we act so that the natives understand us to have made a definite promise, then we should live up to that promise. The Philippines, from a military standpoint, are a source of weakness to us. The present administration has promised explicitly to let them go, and by its action has rendered it difficult to hold them against any serious foreign foe. These being the circumstances, the islands should at an early moment be given their independence."

Mr. Taft, when Secretary of War, repeated the above in the following words:

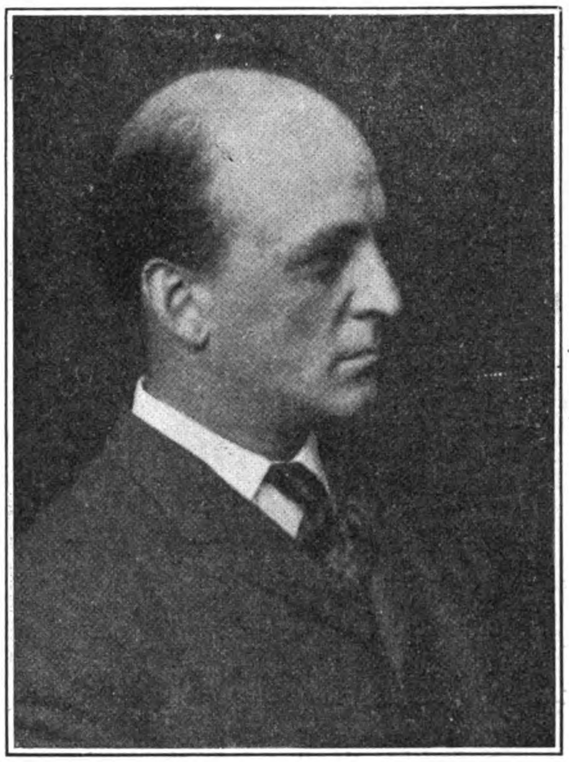
"When they have learned the principles of successful popular self-government from a gradually enlarged experience therein we can discuss the question whether independence is what they desire and grant it or whether they prefer the retention of a closer association with the country which, by its guidance, has unselfishly led them on to better conditions."

President Wilson in a message to the Filipino people, said:

"We regard ourselves as trustees acting not for the advantage of the United States but for the benefit of the people of the Philippine Islands. Every step we take will be taken with a view to the ultimate independence of the Islands and as a preparation for that independence."

Former Governor-General Smith, held that:

"The holding of the Philippines, not for selfish exploitation, but as a sacred trust for the benefit of those residing in them, the establishment of a government, not for our satisfaction or for the expression of our theoretical views but for the happiness, peace, and prosperity of the Filipino people, the evolution of a government by Americans assisted by Filipinos, into a government of Filipinos assisted by Americans, and the education and preparation of the people for popular self-government was the broad policy of President McKinley, of President Roosevelt, of Governor Taft, of Governor-General Wright, of Governor-General Ide and of all their successors. It is the policy to-day, and its continuance will, I believe, bring the Filipino race happy and contented to the realization of its hopes and ideal rarely attained, rarely enjoyed, save through blood and tears."



Hon. W. CAMERON FORBES

The Boston Philanthrophist and Millionaire, who Sacrificed a Brilliant Business Career to Give the best years of his Life to the carrying out of American Ideals in the Philippines. He was Summarily ousted from the post of Governor-General by President Wilson. He is to accompany Major-General Wood in his tour of inspection of the Philippines

All of which is summed up and reiterated in the Jones Act, passed by Congress on June 29, 1916:

"It is, as it always has been, the purpose of the people of the United States to withdraw their sovereignty over the Philippine Islands and to recognize their independence as soon as a stable government can be established therein."

The record seems clear. The above promises made for and on behalf of the American people by their chosen representatives must stand as the unalterable policy of the nation, the plighted troth that we are in honor bound to live up to, this, notwithstanding the opposition of vested interests created in the Islands with a full knowledge of the conditions under which our government has retained them under its protection. As to whether it is wise or not, whether independence will destroy these investments and injure American and foreign trade, is beside the question. The honor of the American people cannot be measured in terms of dollars and cents. Investors who hazarded their money in Philippine enterprises did so with their eyes open, knowing full well that the day must sooner or later arrive when we would have to comply with our promises. The element of trade cannot and should not be permitted to enter into any consideration of the fitness of the Filipino to govern himself. If he has reached that stage where he is able to manage his own affairs, the time cannot be long delayed

when we must let him paddle his own canoe. The Filipinos insists that he has reached that stage. Is this true ?

The Wilson administration acted upon the theory that to bring the Filipino to this stage it was only necessary to hand over the government to him and give him full rein. The original policy contemplated a preparatory schooling extending over two or three generations, so the native would be entirely liberated from the influence of the old Spanish cacique political system, and thoroughly trained in the practical operation of the more enlightened American idea of self-government. In pursuit of this program, republican administrations sent to the islands men who stood for all that was good in our national life, men who gave unselfishly of the best that was in them in order that the Filipino might profit by their example. The Americans who made the Philippines what they are to-day, those pioneers who bore the burden in these far away islands of the Pacific, created a monument to American honesty and efficiency in colonial administration unequalled by any government in the world. As we glance down the roster of these administrators, from Taft to Forbes, the commission and department heads and scan the army register of past commanders, we find the names of men who made their mark, and returned to the home country richer in experience and better qualified and equipped to serve the nation in bigger and better things.

Their work, however, went for naught as soon as Wilson was inaugurated. Governor-General Forbes, who gave the best years of his life, and considerable of his private fortune, to the great work of Philippine advancement, and developed the resources and public works of the islands, was ousted from office over night and within a week after the arrival of his successor many of the old and tried American bureau heads were discharged and natives elevated to their places. After eight years of Filipino direction, the standards set by the republican officials have disappeared. All reliable reports from the islands coincide in that the government is now lacking in efficiency, the wonderful system of roads has been permitted to deteriorate, the public health service is bad, the schools, the basis of the experiment, have run down, the currency is unstable, and graft of the old Spanish type, is again in evidence. The solid foundation upon which the great structure of Filipino nationalism was to be built, was handed over to native politicians to complete. The picture recalls the grand palace that was to have been built opposite the Ayuntimiento in the old walled city of Manila during the Spanish régime. The plans were approved by Madrid, the foundations were laid, but the walls of the edifice were never erected. The palace was carried on the official property returns as a completed building, the funds appropriated for its upkeep going into the pockets of the captain-general or his henchmen. When the islands were turned over to the United States, we receipted for one completed palace, which, upon investigation, reduced itself to the foundations.

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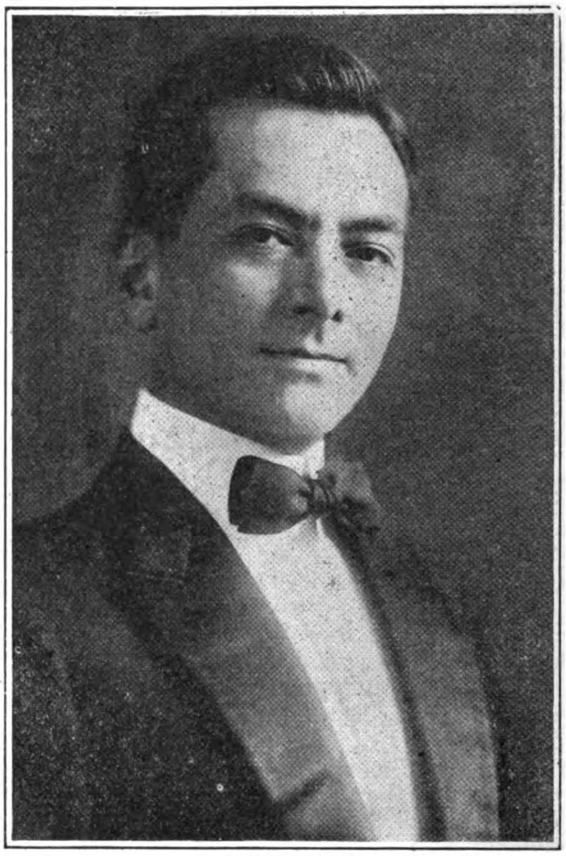

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THE LADERS OF THE PHILIPPINE INDEPENDENCE MOVEMENT

Mr. SERGIO OSMENA
Speaker of the Philippine Assembly

Mr. MANUEL QUEZON
President of the Senate

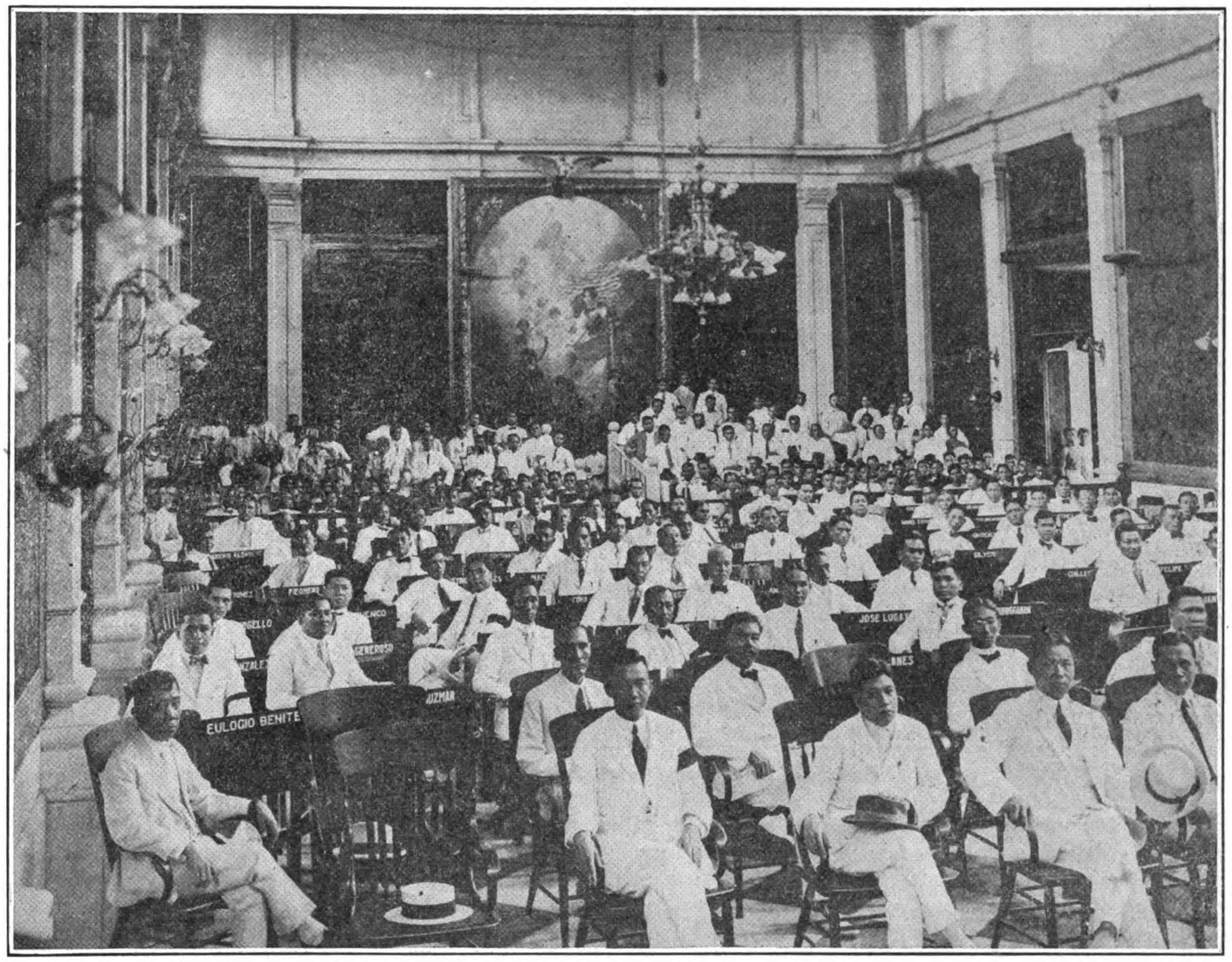
At the expiration of eight years, or, since the republican architects were ousted from supervision over the erection of the structure, the American people find flimsy nipa-thatched bamboo casas spread out over the solid concrete foundations intended for the greater and enduring monument of their philanthrophy and disinterestedness. Instead of a progressive, democratic self-governing community, they find a reversal to Spanish *caciquismo* or political bossship, with the power concentrated into the hands of Mr. Sergio Osmena, speaker of the assembly, and Mr. Manuel Quezon, the president of the senate, both leaders of the immediate independence movement, "with, or without strings," and in control of political patronage.

Under the leadership of these two politicians, the Filipino people loudly declare that they have arrived at the stage where they can govern themselves. There may exist a legitimate difference of opinion as to the Filipinos capacity for self-government, but any discussion of the question can only serve to postpone the

date of separation for a very brief period of years. We cannot always haggle with our wards over this point without incurring their enmity. We cannot go back over the past eight years. What has been done must stand as an accomplished fact. We cannot now say to the Filipino that the policy of Wilson and Harrison was a mistake, and he must return to the old system of tutelage, without creating resentment, and possible disorders, or even a recurrence of armed rebellion. We made the sacrifice once, but will never make it again. If the Filipinos are to be granted their independence as a result of our proclaimed policy, it would seem that now is as good a time as any to discharge our obligations.

There are, however, other aspects to this problem. Unhappily for the Filipino, greater questions have arisen that must enter into the discussion and determine the date of severing the bond. The world has moved ahead in the past six years. The great problems of empire, of peace or war, have been shifted from Europe to Asia, from the Atlantic to the Pacific, with the result that the Philippines lie in the very centre of the tremendous forces gathering momentum for another world upheaval. The world war transformed the international status of the islands. The development of submarine warfare, necessitating many secret bases of operations, singles out the islands as the ideal lair of the undersea terror, and imposes upon their government the weighty obligation of being able at all times to maintain their neutrality in any future conflict between the great naval powers. As long as the islands remain under the strong control of the United States, their neutrality is assured, but once this powerful protection is withdrawn, they fall an easy prey to the first power whose strategical interests demand their employment as submarine bases. In the new line-up of the Nations, the Philippines have become the "Keys of the World," the strategic centre of world empire, the buffer between mighty forces clashing for supremacy in the Pacific and the right to exist in Asia.

The present centre of world empire lies in India, the cornerstone of British prestige, the bulwark of Australia, the half-way house to New Zealand, Singapore and Hongkong, the base of the mighty structure of British trade and influence in Asia and the Pacific. Before the great war, the menace to the security of this empire came from the west. Gibraltar was the key, the first powerful fortress along the all-red-route to Bombay and Brisbane. With the collapse of Germany and the elimination of all danger from this quarter for another generation, the next possible menace arises from the East. Singapore supersedes Gibraltar as the strategic key to the British empire. From a position of negligible political importance, the Philippines have become the buffer between two great empires, the barrier to the expansion of the Monogolian race towards the south and southwest, the guarantee to Singapore's position and the assurance to Australia and New Zealand that they will be permitted to work out their destinies without fear of Asiatic domination. On the other hand, the islands stand as a bulwark guaranteeing to Japan that her existence will never again be menaced from that direction. The neutrality of the Philippines is therefore a matter of grave importance to Britain, Japan and Australia. Like the Swiss, the Filipino must be prepared to fly to arms at a moment's notice to defend a neutrality upon which rests his precious independence.



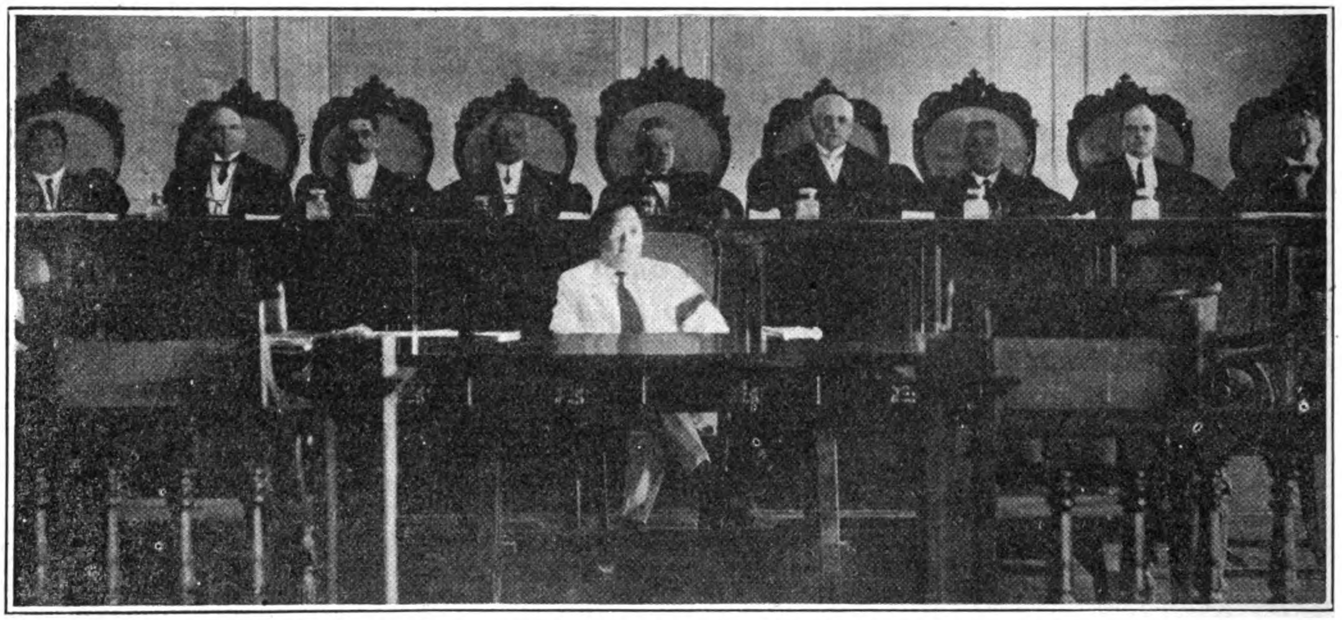
The Fifth Philippine Legislatures in Joint Session, July 21, 1919

If we admit the possibility of future wars, then we cannot ignore the strategical situation. Diplomats and statesmen may discuss international relations from altruistic angles, but behind them stands the general staff, whose duty is to lay plans for national defense against any and all possible enemies. They are cold-blooded and unsentimental, think in terms of strategy, and, in matters

of national security, dictate the policy of a government. The real question underlying the recognition of an independent Filipino republic would seem to be whether or not it could furnish acceptable guarantees to the larger nations that its numerous islands will not be employed in the event of war as secret bases for submarine activities against their squadrons and mercantile fleets, that their mountains and hill tops overlooking the sea lanes, will not conceal secret wireless stations betraying the movements of ships to the enemy? Independence carries with it heavy obligations. Whenever a people become too weak to discharge these obligations to stronger and better organized neighbors, the open pages of history tell us that their independence is sooner or later impaired and eventually disappears. Unquestionably, the American people would rise up in armed wrath against any unjustified or unprovoked assault upon the liberties and integrity of an independent Filipino republic, but they might wisely hestitate before plunging into hostilities in behalf of a people who made no move to discharge their international obligations in a whole-hearted manner. It goes without saying that a weak Filipino republic could never hope to fulfill its duties as a buffer in the clash of racial forces which each year seem to be growing in intensity in the Pacific. If this be true, then the first essential to Filipino independence would seem to lie in the creation of an army and navy strong enough to guard and patrol their immense coast lines and prevent the use of their numerous bays and reefs as bases for submarine operations. *If the Filipino is to maintain his independence he must be trained to defend his neutrality.* To sever the bond without such preparation is to invite ultimate disaster. The Filipinos should be called upon to pay the price and tax themselves in advance in order to cover the cost of this preparation, so, when the time arrives, they can stand alone and assume their obligations to their neighbors without falling back upon the United States to stand the burden. When the day arrivés to comply with our promises, there should be a complete political break, a definite understanding that the United States will never be called upon to act as their permanent guardian. Unless this is done, the American people must eventually be drawn into the swirl of Asiatic politics and intrigue and forced to take a prominent part in the settlement of complex problems they had no part in creating.

The Philippines are geographically a part of Asia. The day America withdraws, the islands will fall automatically under the sphere of influence of the strongest Asiatic power, and we will have no further voice in determining their strategical position. The Philippines will become another China, an island Siam, caught between the jaws of an international nut-cracker, and the world will be treated to a repetition of the intrigues which have brought these countries to their present unenviable state. Bereft of the advantages derived from the operation of American tariff laws, commerce and industry will languish and the revenues fall off. When the time arrives, as it must, for the Filipino republic to approach the international money-lender for assistance, one by one the choicest islands will be earmarked as security, and unless the natives are made of sterner stuff than their Asiatic mainland brethern, it is not difficult to forsee their fate. If reports from the islands can be relied upon, the day is not far distant when the money-market of America will be closed to their government, and once the political separation becomes a fact, and Americans lose interest in the islands, they will have to seek financial accommodation elsewhere. True, the United States might apply a "Platt Amendment" to cover the Philippines, but this means that we must stand as their permanent guardian. The people of America might object to that.

There is another question that must be squarely faced before an independent Filipino republic can hope to enter the family of free nations. The most serious problem now before the world, is undoubtedly involved in an equitable solution of the so-called racial issue, or the right of the white man to exclude the Asiatic from his lands, and then follow him up in Asia and dictate what he shall or shall not do when his existence is at stake. The might of the United States has permitted the extension of our exclusion laws to the Philippines. We have closed the door of one Asiatic country against the entrance of another Asiatic people of similar race and blood. We have taught the Filipino that the Chinese and Japanese, their nearest neighbors, are an economic menace, and, notwithstanding that for many centuries the Filipino has welcomed the Chinese and intermarried with them, they have accepted our doctrine of discrimination.



Justices of the Supreme Court of the Philippine Islands

The proposal to admit Chinese laborers to the islands recommended some months ago by a Filipino agricultural congress called forth a vigorous protest from the native labor unions, and a campaign was launched under the leadership of Mr. Manual Quezon to keep the bars up. It is our firm conviction that when Mr. Quezon, playing to the labor vote of the islands, defeated this measure, he drove the last nail in the coffin of Filipino independence. It is well for us to remember that although the Chinese and Japanese governments and people may be willing to accept, for the present, at least, the Anglo-American conception of racial or economic inequality and bow down before the stern necessity of accepting our exclusion laws, they will never concede such a right to another Asiatic people, which they, in turn, hold as inferior. The extension of our exclusion laws to the Philippines, coupled with the land laws prohibiting foreign ownership, may be justified on the lofty grounds of

preserving the islands for the natives as long as they remain under our control, but at the same time it must be admitted that they constituted an unwarranted slight to China, and in the matter of the land law agitation, an unnecessary humiliation to Japan. We have taught the Filipino the tricks of the demagog and cheap politician in appealing to race prejudices and passions. They have been apt pupils. We must expect the inevitable consequences. An independent Filipino republic could never hope to embark upon an international career, even under the guardianship of the league or the protection of the United States, with an Asiatic exclusion law written into its statute books. When the time arrives to launch the new republic as a going concern, it must, of a necessity, start with its own treaties of amity and commerce with the rest of the world. China and Japan are most important members of the international family, and unless the United States government is willing to take upon its own shoulders the responsibility for a permanent solution of the racial problem, the new republic must enter the family of free nations on a plane of full equality with its Asiatic neighbors. To encourage the Filipino to stir up racial antagonisms while under our tutelage, implies that when the time arrives, the United States may be compromised to uphold the doctrine. If we refuse to do this, then an independent Filipino republic discriminating against other Asiatics, is an idle dream. Unless Americans are willing to carry their ideas on the racial question to the extremity of going to war for the purpose of preserving the Philippines for the Filipinos, further racial agitation in the islands sounds the death knell to the aspirations of the Filipino people.

An independent Filipino republic with the doors open to Asiatic immigration, means that sooner or later the Malay will pass under the economic domination of the Chinese or Japanese in the same manner that his race in other parts of the Far East have gone down in the struggle for existence before the economic superiority of the yellow man. A strong Filipino republic could enact stringent laws against foreign ownership of land and preserve its heritage. A weak, impecunious government having recourse to the money-lender would be unable to enforce such a law, and in the end would have to admit foreign ownership and so open the door to the Chinese or more enterprising Japanese. Malay independence must inevitably lead to economic servitude.

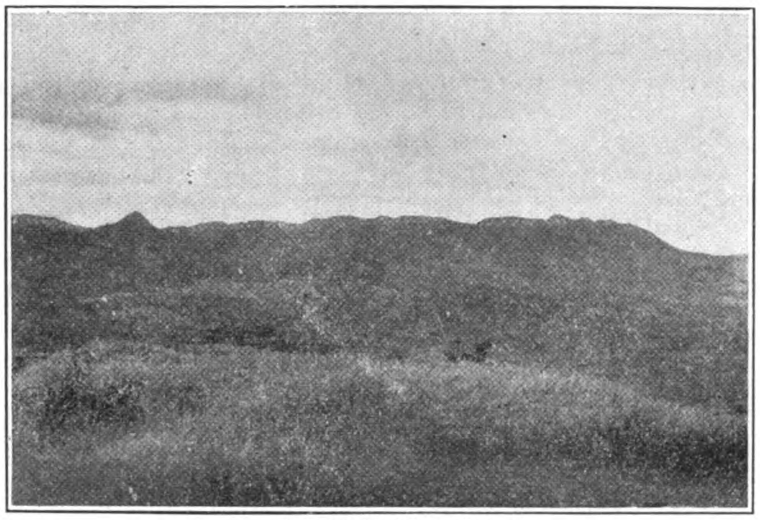
There are other aspects to the question of Filipino independence, but the above are the two most important that must be taken into immediate consideration. The Filipinos declare that they can manage their own affairs and desire immediate independence. There is no sense or justice in holding a people against their will, and in a show-down, the American people would never again send an army to the islands to enforce their rule. What is the solution ? Would it be unfair to call upon the Filipinos to prepare themselves to discharge their international obligations by being in a position to guarantee and safeguard their neutrality ? Must they not face the truth that they are an Asiatic nation, and must open their doors to their neighbors ? Must they not be told kindly yet firmly, that they must readjust their tariff and internal revenue systems in order to meet the requirements of a budget calling for a heavy army and navy expenditure ? If their revenues are inadequate to meet the strain and they have to borrow, can they look to America for financial aid when their lands are closed to the investment of foreign capital.

Every honorable American, especially those who have given of their time and experience or contributed in any way to the success of our national experiment in the islands, has only the highest interests of our wards at heart. They look forward with hope and pride to the day when the Filipinos can take their place in the world, a self-governing, self-respecting nation. There is no desire to extend the tutelage one hour beyond the time required to carry out the original policy. All that they can hope for in return for their labor and sacrifices, is that the experiment will prove a success, that the Filipino will not slump back to political slavery, and he will be able to safeguard the priceless boon of liberty that has been handed to him without having to pass through the trials that all other peoples have borne in order to attain their ideal. The independence of the Philippines may never be directly menaced, by a stronger power, but their ability to maintain internal peace and order and guarantee the lives and properties of foreigners may well be the test of their capacity for self-government and independence. We can imagine a well equipped and efficient police service operating in and adjacent to the main centres of population, but it is difficult to visualize such protection being extended to Mindanao or the Sulu group. In the event of war between any of the great powers, the test of independence will be the capacity of the Filipinos to preserve their neutrality.

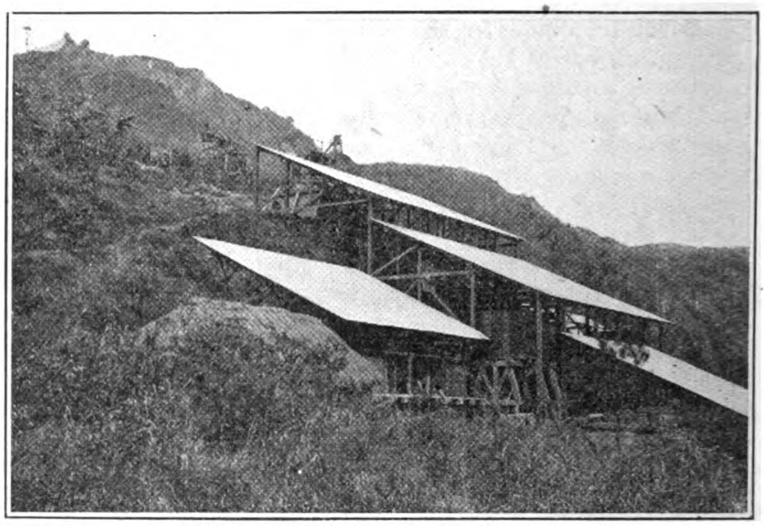
Quo Vadis !

With these facts before us, it is well that Americans should stop and fit them into the general Far Eastern situation and ask themselves fairly where they are going. We crossed the Pacific and assumed the gigantic task of guaranteeing the integrity of China, as part of our "open door" policy, at a time when a secret alliance existed between China and Russia directed against Japan. We have gone further and extended the doctrine to cover Mongolia and Manchuria. We have injected ourselves into the centre of the Asiatic cockpit where the great racial problem must eventually be solved and now stand between the two great antagonists. We have attempted to preserve the integrity of Russia at a time when her red armies are crushing out the independence of other peoples who lie in the path of their forward march towards the traditional Muscovite goal in India. We have excluded the Mongolian from our shores and extended the doctrine to the Philippines, thus forcing him into Asia to seek the future of his race. We then come to the aid and comfort of Russia in order that she may perpetuate her hold upon lands stolen from the yellow man and now required for his expansion. We say to Japan, that she cannot be permitted to defend herself in Inner Mongolia against a "menace from the direction of Urga," yet we have the most unimpeachable, first-hand evidence that our interest in these regions dates from our acquisition of a railway contract that was designed to compel Japan to sell out the South Manchuria Railway, or failing in this, to make her position in this territory untenable.

We have done our best to internationalize the Chinese Eastern Railway and induce Japan to evacuate Eastern Siberia. In the Philippines we stand as the buffer of empire, the guardian to Britain's position in India, the barrier against the expansion of the Mongolian race southwards towards Australia, the sponsor for the security of Japan's position in the event of another upheaval. With Singapore transformed into the Gibraltar of the East, the Philippines becomes the guardian of the other passages between the Indian and Pacific Oceans. The islands are keys to empire. The keeper of the keys must inspire respect and confidence and give proof of his ability to hold them. The fate of strong nations is in his keeping. Can the Filipino discharge his obligations to his neighbors ? If so, he can remain the keeper of the keys. If he fails, the keys will be taken from him. If America is to continue to apply policies and doctrines in Eastern Asia and to insist upon standing between Japan and a solution to her vital and pressing problems, then the keys must remain in our possession, and we must, as Mr. Daniels recently reminded us, have a navy large enough to "lick all creation." If, on the other hand, we will be content to have this racial problem shifted from our shoulders on to those who created the issue, and permit Japan to solve her own problems in her own way, we can safely hand over the keys and get out of the islands as quickly as we can. As long as we hold the Philippines, we must face the necessity of maintaining a huge fleet, and even then, their possession will always be a source of weakness to us. We have insisted upon having a voice in these complex Asiatic problems, and our friends in Europe have quietly "slipped the buck over to us." Will we hold it and continue to play against a stacked deck, or will we call for a new deal with the cards face up on the table ?



A Coal Field at Cebu



Mill and Cyanide Plant at Autamok

Mineral Production in the Philippine Islands in 1919

By Warren D. Smith of the Bureau of Science

THE grand total of mineral production for 1919 shows a slight increase over that for 1918. The total for 1918 amounted to Pesos 6,533,354. Such figures for 1920 as are at present available indicate that the industry is advancing and will continue to do so. With the advent of more settled conditions and more normal times, the mining industry should take a long step forward in the year to come. With the possibility of production in the near future from oil wells in the Islands the figures for future years should show marked increase.

TABLE 1.—MINERAL PRODUCTS OF THE PHILIPPINE ISLANDS FOR THE CALENDAR YEAR 1919.

Product.		Quantity.	Value. Pesos (a)
METALLIC :			
Iron	metric tons	67	34,964
Iron Ore	metric tons	18,598	92,990
Silver (b)	fine grams	261,558	18,828
Gold	fine grams	1,970,651	2,619,449
Total value of metallic		... ...	2,766,231
NON-METALLIC :			
Asbestos	metric tons	375	37,500
Bituminous Rock...	metric tons	1,400	21,000
Brick and tile (c)...			200,000
Clay (pottery) (c)...			500,000
Cement	barrels	10,396	124,752
Coal	metric tons	32,892	822,300
Lime (c)	metric tons	20,000	534,000
Sand and Gravel (c)	cubic meters	403,986	588,379
Stone (c)	cubic meters	404,709	832,630
Salt (c)	metric tons	32,000	900,000
Sulphur	metric tons	12	1,680
Mineral Waters (c)	liters	225,000	60,000
Total value of non-metallic ...		...	4,622,241
Grand total		... ...	7,388,472

(a) One peso Philippine currency equals 100 centavos, normally equals 50 cents United States currency.

(*b*) No silver is mined separately, but a small amount is alloyed with the gold.

(*c*) Estimated.

TABLE 2.—PHILIPPINE GOLD PRODUCTION BY DISTRICTS FOR 1919.

Districts.	Quantity *Fine grams* *	Value. *Pesos.*
Ambos Camarines	327,189	434,910
Masbate	953,985	1,268,065
Mountain Province	684,113	909,344
Miscellaneous	5,364	7,130
Total	1,970,651	2,619,449

Gold.—The gold production is still highest of all the minerals mined in the Philippines and the industry remains practically in the hands of Americans. Some of the reasons for this are here given.

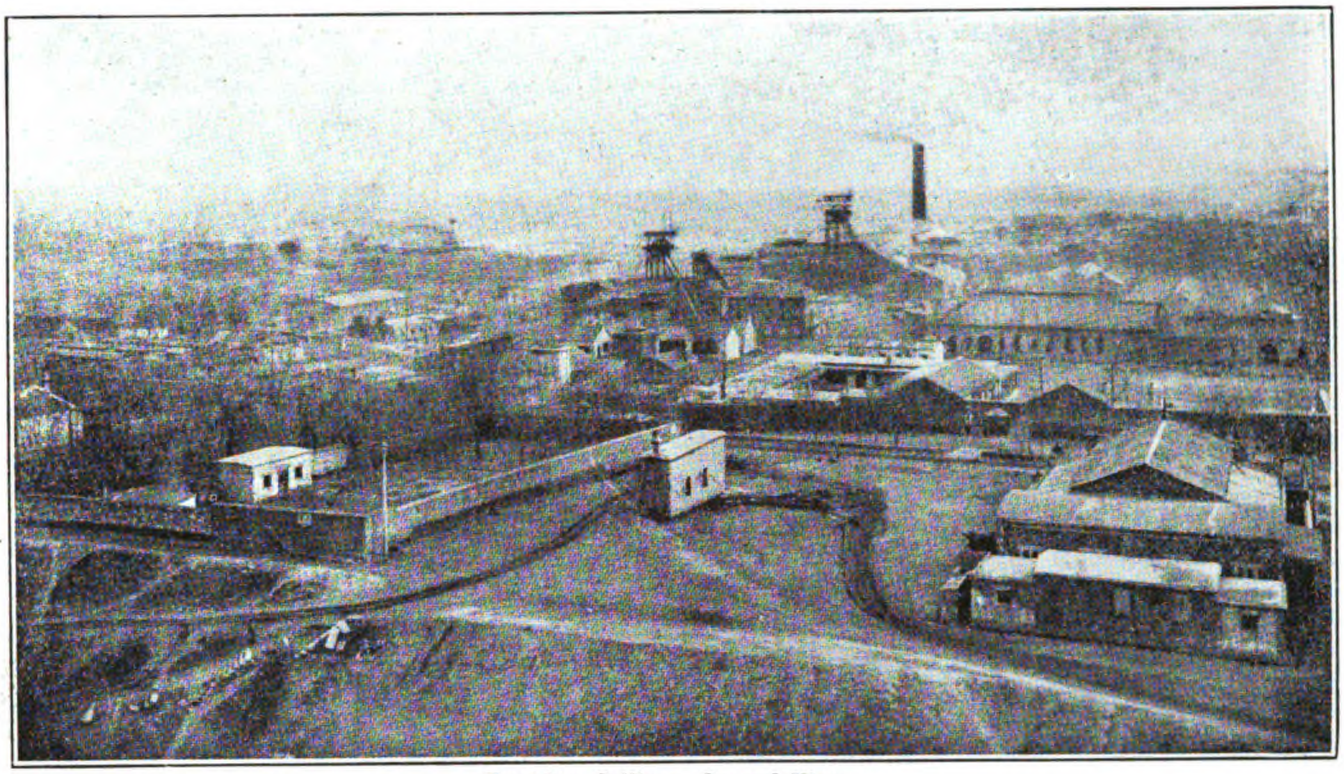
The mining and milling of gold according to modern practice call for very expert knowledge which Filipinos have not yet acquired ; and, furthermore, Filipino capital has not up to date been willing to venture very much in this form of business. The Aroroy district on Masbate Island still leads all others, owing to the continuous operation of its two substantial mines, the Colorado and the Syndicate. Benguet with its single large producer is a close second. The Paracale district is a poor third. Except for the operation of one dredge and one small stamp mill, the district is exceedingly inactive.

Silver.—All silver produced in the Philippines is found alloyed with gold. Some ores carry as much as five ounces of silver to one of gold.

Asbestos.—A very encouraging output in the asbestos industry can be recorded. Asbestos products reached the value of Pesos 37,500 for 1919, as against Pesos 5,250 for 1918. All of the raw asbestos comes from Baruyen River in Ilocos Norte.

Cement.—The Rizal Cement Company, at Binangonan, produced 10,396 barrels of cement in 1919 ; but the failure of this concern has caused the cessation of cement manufacture in the Philippines for the present. It is to be hoped that the new National Cement Company, much more favorably located at Naga, Cebu, will put this industry where it belongs.

* One gram fine gold=1.32923 pesos.



Tongshan Colliery—General View

The Kailan Coal Mines

ON the 1st July, 1912, a working agreement was entered into by the Chinese Engineering and Mining Company, Limited, a British Company registered in London, and The Lanchow Mining Company, a purely Chinese Company operating under the laws of China. Under this agreement, the management in China of both concerns was handed over to the Kailan Mining Administration.

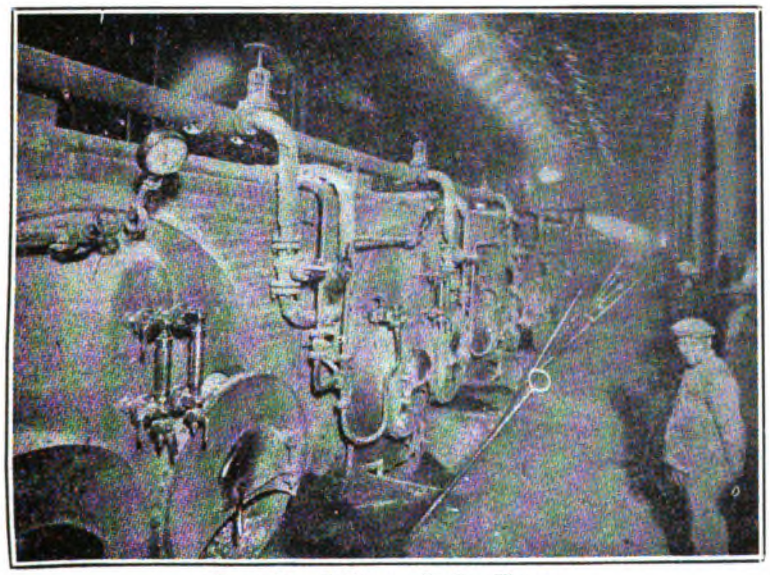
The Chinese Engineering and Mining Company, Limited was popularly known in China as the Kaiping Company, and the word "Kai-lan" is one of those *multum in parvo* words to which the Chinese language readily lends itself, made up of the first syllables of the words "Kai-ping" and "Lan-chow." All the mines and properties of the two Companies in China are now controlled by the Kailan Mining Administration.

The aggregate paid-up capital of the two Companies amounts to two millions sterling, whilst £1,200,000 has been raised on six per cent. first mortgage debentures ("Kailan bonds"), which are being redeemed at the rate of £24,000 per annum.

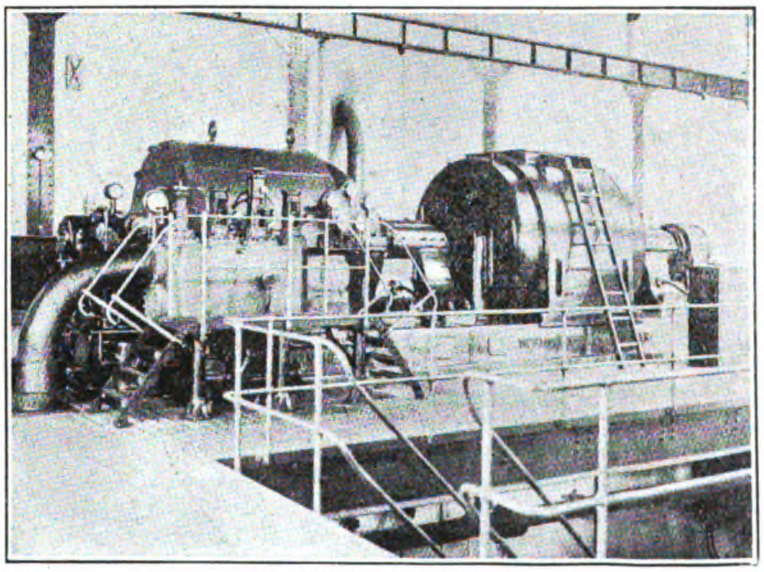
The head office of the Kailan Mining Administration is at Tientsin, where accommodation is at present found in temporary offices, pending the erection of new buildings.

SITUATION OF THE MINES.—The coal mining concession is situated in the Kaiping district of the province of Chihli, North China.

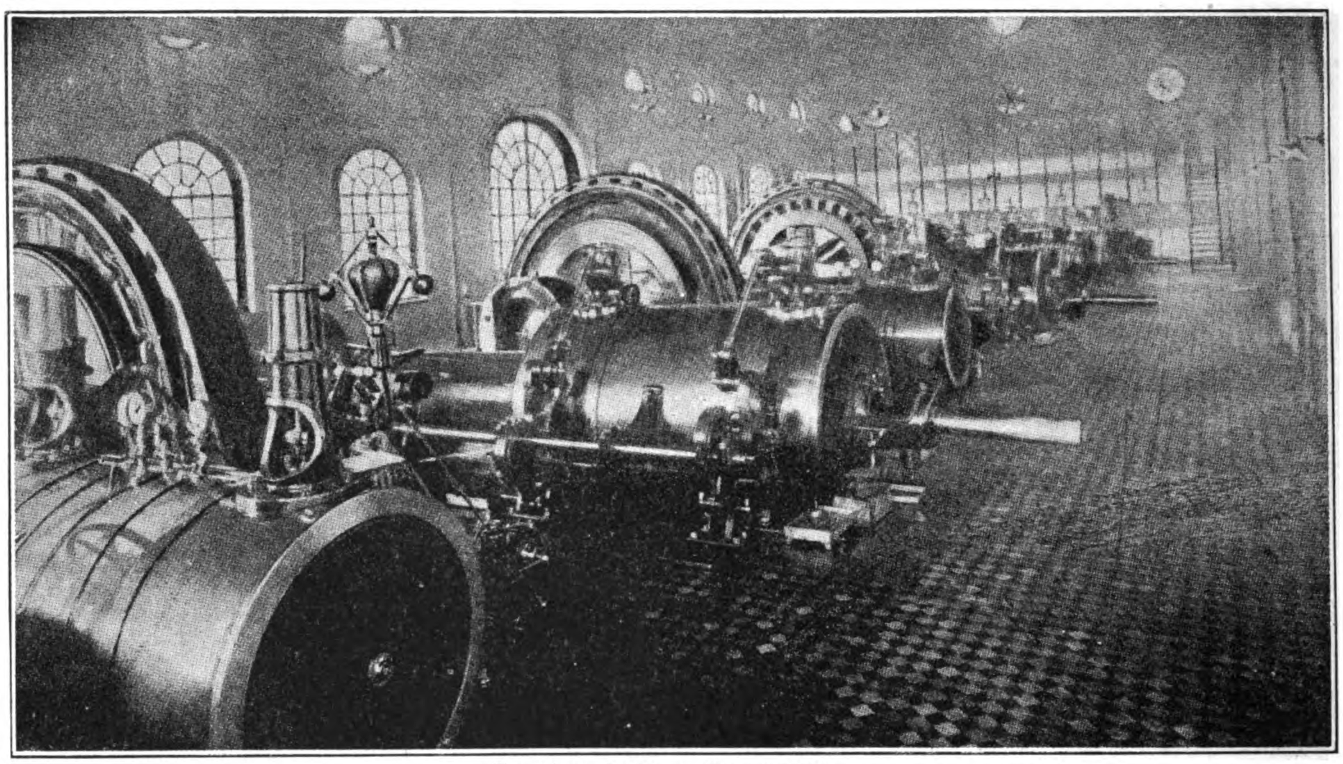
The mines are served by the Peking-Mukden Railway, which connects them with Tientsin, a great trade centre of over 800,000 inhabitants 81 miles away, and Peking, at a distance of 160 miles. To the river port of Tongku (for Taku Bar) and to the deep-water port of Chinwangtao the distances are 50 and 80 miles respectively.



Tongshan Colliery—Boiler House



Linsi Turbo Alternators



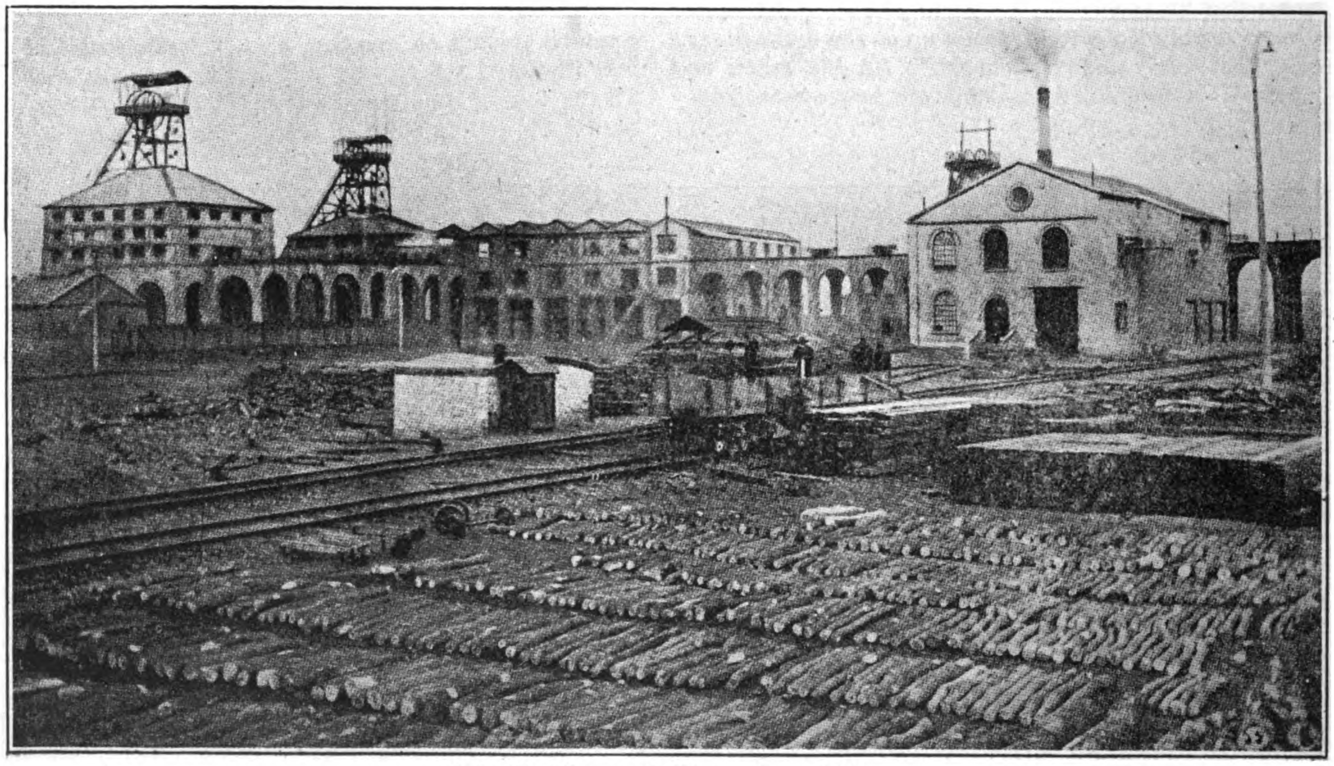
Tongshan Colliery—Power House

At Tongku the Administration has a large stacking yard and wharf for the bunkering of ships running to Tientsin or Taku Bar.

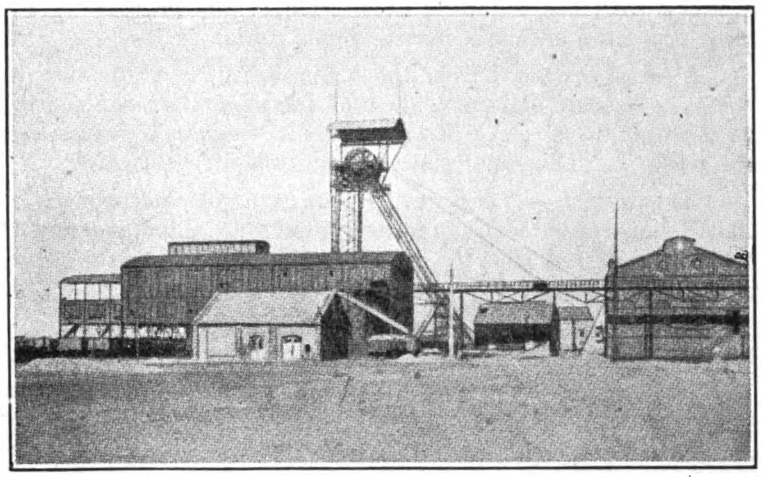
GEOLOGICAL.—The coal seams of the Kaiping basin form part of a synclinal formation of permo-carboniferous age, and are superimposed on a thick bed of carboniferous limestone, a characteristic peculiar to all coal deposits in China. The seams outcrop in the low hills lying to the north of the coalfield.

Thirteen different seams of coal have been proved. At the south-western end of the basin, the aggregate thickness of coal is 40 to 60 feet at Tongshan Colliery. Passing along the outcrops towards the north-east, the aggregate thickness at Machiako Colliery reaches 60 to 80 feet, and at Chaokochwang 80 to 90 feet, whence it decreases until at Linsi Colliery at the eastern extremity the thickness is again 40 to 50 feet. To the south and south-east no outcrops are visible, the seams being covered by an alluvial deposit, and this part of the field has not, so far, been exploited. At present, the known deposits of coal in these measures down to a depth of 3,000 feet are estimated to amount to over one thousand million tons.

The general cross section on page 224 shows what is presumed to be the approximate shape of the basin, only the edges of which have been exploited. Like all other coal measures, the several seams of the Kaiping basin must have originally been deposited in horizontal beds. During one of the several geological ages which have since passed, a great upheaval occurred which resulted in these measures assuming their present cup-shaped or synclinal form. Away to the west, there are indications that the edge of the cup was bent right over forming an anti-clinal. This



Chao Ko Chwang Colliery—General View



Ma Chia Ko Colliery—Pit Head Installation

great distortion of the strata has resulted in the seams in this part of the field becoming much broken and frequent faults are there encountered.

As often happens, beds of fireclay underlie the seams of coal. Fireclay is, in fact, presumed to be the soil in which the plants grew which time has converted into coal.

TONGSHAN COLLIERY.—In very early times, the natives of the Kaiping district contented themselves with quarrying the outcrop coal, and it is recorded that coal was mined by these primitive methods at Tongshan during the later years of the Ming dynasty, or some three hundred years ago. Modern methods of working were first introduced in 1878 at Tongshan Mine, this being the first occasion that foreign mining methods were adopted in China. Three large shafts of 14 to 16 feet diameter have now been carried to a maximum depth of fifteen hundred feet, and the capacity of the present equipment is fully 2,000 tons a day. The power station at Tongshan contains three alternators, each capable of developing 1,200 kilowatts. The principal engineering workshops have been established at this colliery, where all the heavier repair work, as well as a large amount of manufacture, are carried on. The shops are capable of turning out heavy castings, centrifugal pumps, ventilating fans, railway cars, heapstead gear, and generally all the minor engineering and fittng work required about the mines.

MA CHIA KO.—Ma Chia Ko Mine has a maximum daily capacity of 2,500 tons. The electrical equipment consists of one alternator of 1,100 kilowatts and one sub-station where current derived from Linsi Mine at 30,000 volts is transformed at 2,200 volts.

CHAO KO CHWANG.—Like Ma Chia Ko, the Chao Ko Chwang Colliery is comparatively new, and the workings have attained a maximum depth of only 900 feet, from which level coal is delivered through three shafts of 13 to 15 feet diameter. The output of this mine is, however, greater than that of any mine outside America. At present, 5,500 tons of coal a day are produced, and it is anticipated that very shortly the output will reach 6,500 tons daily.

There is no power station at Chao Ko Chwang, all the current required here being transmitted from Linsi.

LINSI COLLIERY.—The Linsi Mine is the main centre for production of power. Here is also situated the washing plant, where the lower grades of coal are cleaned.

The output of this mine is at present 3,500 tons a day, and will shortly be increased to 4,500 tons. The two vertical shafts of 14 and 15 feet diameter have been carried to a depth of a thousand feet.

The electrical equipment comprises two alternators of 1,200 kilowatts and two turbo-alternators of 3,000 kilowatts each. Two new turbo-alternators of 6,000 kilowatts each are now being installed in place of the small alternators. When these alterations have been completed, the capacity of this central station will be 18,000 kilowatts. For the distribution of this power to other mines two high-tension lines have been erected, so that the risk of any temporary breakage cutting off one of the mines from the source of power is reduced to a minimum.

The washing plant has been in service since 1915, and is capable of treating 100 to 150 tons of coal per hour, the quantity varying according to the grade of coal being washed.

GENERAL.—The equipment throughout the mines generally is of the most modern type, and will compare favorably with the largest and best equipped collieries of Europe or America. Electrical machinery is used throughout. There are over 200 electric motors and over 100 transformers in daily use. Practically the only service performed by steam engines direct is the actual raising of coal, and it is now proposed to replace five of the existing winding engines by large electrically-driven machines.

The boilers in use at the various power stations have an aggregate heating surface of over 60,000 feet and consume over 300 tons of coal daily. Mechanical stokers are in general use, and within a short time, hand stoking will be entirely abolished.

For surface transport and shunting, 15 locomotives are employed and 340 wagons, with a capacity of over 4,000 tons.

Haulage underground is effected by 1,100 mules and 6,000 coal tubs with a capacity of over 2,400 tons. Tramways for the haulage of coal underground constitute at each mine a very complete system, all main mule roads being double-tracked throughout their entire length, and in the older mines, extending from one end of the workings to the other for over 3½ miles. All main galleries are brick-lined throughout. The aggregate length of the tramways at present in use underground is more than 300 miles. The substitution of electric or benzine locomotives for underground traction in place of the mules at present in use is being considered.

The labor force employed amounts to 15,000 men underground and 7,000 on the surface, or a total of over 22,000 men.

Some idea of the mines' requirements of material may be given by the following figures of annual consumption :—

Clinker Bricks (Manufactured by the Administration and used mostly underground)...	15,000,000
Dynamite	50 tons
Other Explosives	25 ,,
Mining Timber to Value of	$500,000
Structural Steel and Iron to Value of ...	$250,000

OUTPUT.—The maximum daily output from each mine under existing conditions is estimated to be :—

Tongshan	2,000 tons
Ma Chia Ko	2,500 ,,
Chao Ko Chwang	6,500 ,,
Linsi	3,500 ,,
Total for all mines	14,500 ,,

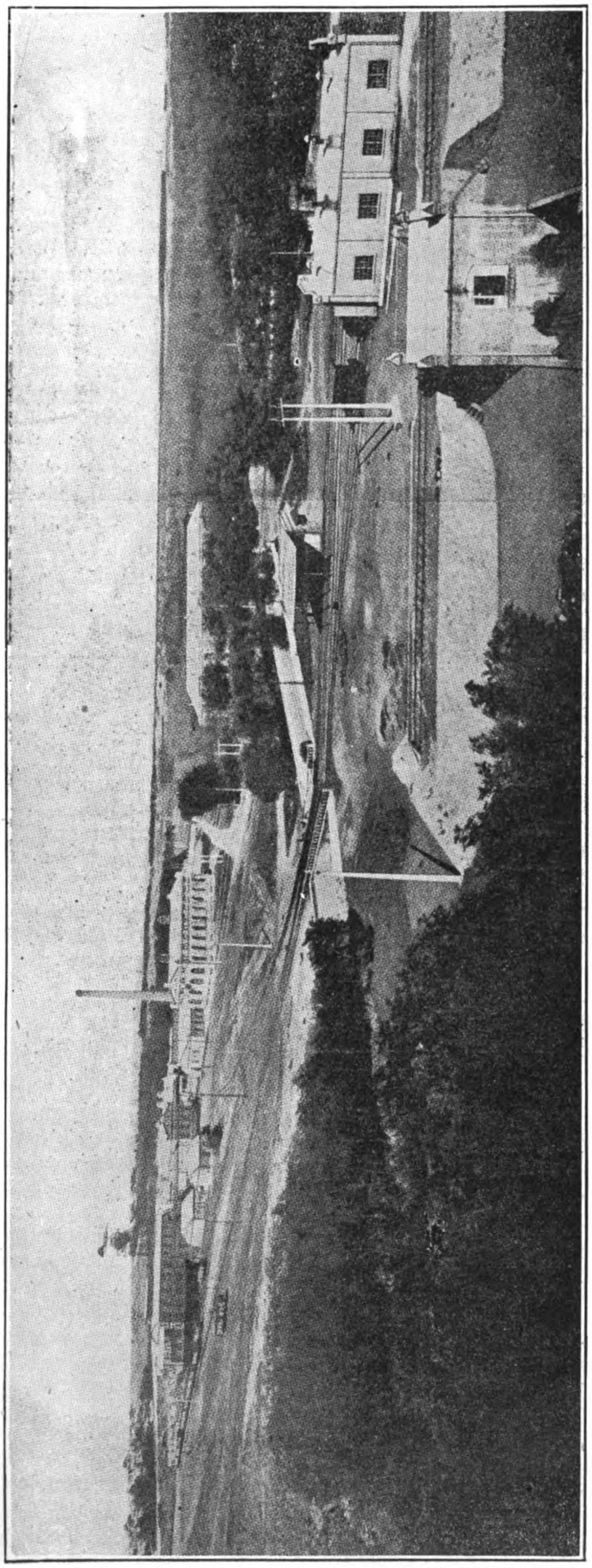
A new mine is now being equipped at Tang Chia Chwang, between Chao Ko Chwang and Linsi, designed for a daily output of from 4,000 to 5,000 tons. With this mine in full working order the output from the Administration's mines should considerably exceed 20,000 tons per diem.

The actual output of coal during the seven years which have passed since the formation of the Kailan Mining Administration is as follows :—

Year ending 30th June,	1913	1,700,000 tons
,, ,,	1914	2,500,000 ,,
,, ,,	1915	2,800,000 ,,
,, ,,	1916	2,900,000 ,,
,, ,,	1917	3,000,000 ,,
,, ,,	1918	3,250,000 ,,
,, ,,	1919	3,400,000 ,,

The production for the year 1919-20 will exceed 4,000,000 tons.

GRADES OF COAL AND THEIR USES.—Kaiping coal is in use throughout the Far East. Direct shipments are made to Shanghai and Yangtze River ports, Foochow, Amoy, Swatow, Hongkong, Canton, Bangkok, Singapore, Java, Manila, Japan, Korea, Manchuria, and all minor ports within this area. To possible users of



Machiako Colliery—General View

Kaiping coal, the following description of the principal grades, their properties and uses, may be found useful.

All coal produced from the Kaiping field is bituminous and coking. It has a high percentage of volatile matter, ranging from 24 per cent. to 37 per cent. The sulphur content averages about one per cent. The yield of ash varies in the different grades.

NAVY LUMP.—This is the highest grade of coal produced by the Administration; as the quantity available is limited, it is reserved almost exclusively for the Chinese, British, and foreign navies in the Far East.

LOCO. LUMP.—Locomotive lump is in great demand throughout the Far East, wherever a high-grade lump coal is required. It is carefully picked and hand-screened to compete with the highest grades of Japanese coal. It is especially used as a bunker coal and as a locomotive fuel. In order to reduce the cost, however, it is most frequently mixed with slack coal, either in a fixed proportion, or in the form of "run-of-mine." Amongst the users of this grade for marine boilers may be mentioned :—

The British Navy.
Messrs. Butterfield & Swire.
China Merchants Steam Navigation Company.
Chinese Maritime Customs.
Haiho Conservancy, Tientsin.
Messrs. Jardine, Matheson & Co., Ltd.
Whangpoo Conservancy, Shanghai.
Shanghai Dock and Engineering Co. Ltd.
New Engineering and Shipbuilding Works.

besides most of the ocean steamship companies visiting the Far East.

As a locomotive fuel it is used by the

Chinese Government Railways.
Korean Railways.
Japanese Government Railways.

FIVE-SEAM SLACK.—For over 40 years the merits of this grade of coal have been appreciated where a slack coal of high calorific value is essential. It is generally recognized as the best grade of slack coal available in the Far East.

NO. 1 SLACK AND NO. 2 SLACK —These two grades are generally similar in character, the only difference being that No. 2 has a slightly greater proportion of ash. Both are eminently suited for use in boilers of all descriptions. Many of the largest plants in the Far East have been specially designed to secure the maximum economy when burning this slack coal.

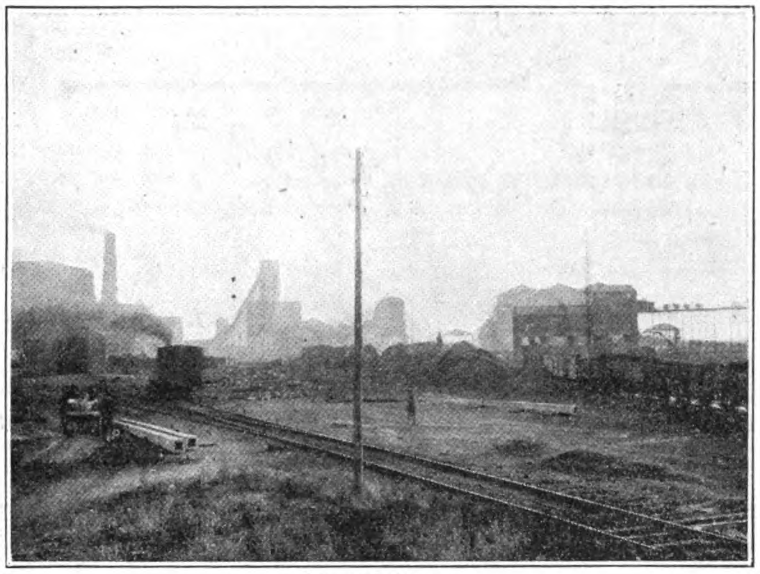
For such purposes as brick and lime burning, oil milling, *samshu* distilling, and such minor industries, No. 2 slack, on account of its lesser cost, is the more popular grade. For steam-raising purposes, a decision as to whether No. 5 seam, No. 1 slack or No. 2 slack is the more economical fuel must depend upon the boiler power available and the distance from the port of shipment to the place where the plant is located. It is obvious that at more distant points the use high-grade fuel becomes, relatively, more economical.

HOUSEHOLD LUMP.—This grade of lump coal is produced from the Linsi Mine, and though inferior to loco. lump as a steam-raising fuel by reason of its greater yield of ash, it is very suitable for household purposes, as it lights easily and burns freely.

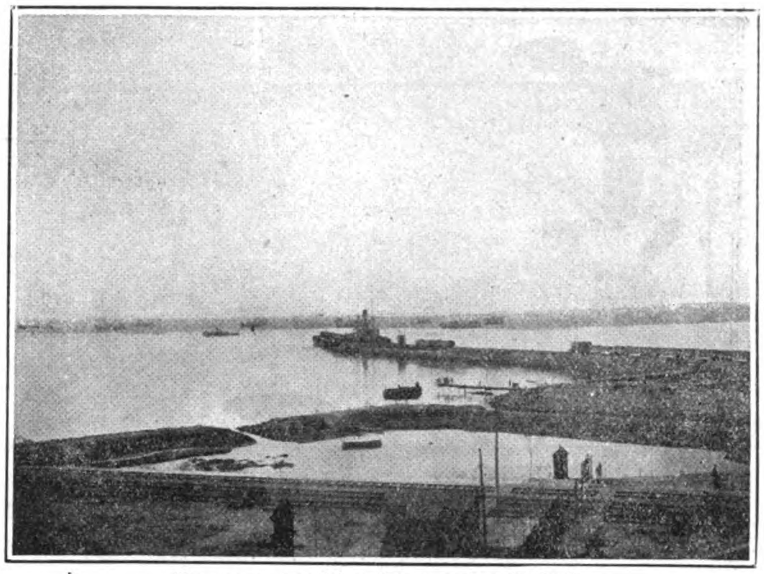
WASHED COAL.—Three grades of washed coal are now marketed. For certain purposes washed coal has an advantage, in that the variation of the ash percentage is very small, it being possible to control this with considerable accuracy during the process of manufacture.

WASHED NUTS are of such size that they pass through a 2-inch ring, but are retained by a $\frac{5}{8}$-inch mesh. These nuts are in great demand for bunkers and for steam-raising purposes generally, where shortage of boiler power necessitates working the boilers beyond their normal rate. At present the demand for this grade far exceeds the available supply.

WASHED SLACK OR DUST.—This grade is similar to the washed nuts in general composition and calorific value, and is



Linsi Colliery



Steamers Awaiting Turn to Load Coal

used in similar circumstances, i.e., in cases where it is necessary to get full valve from the boilers.

JAPAN DUST.—This is a special grade of washed coal for coke-making purposes. It is shipped in very large quantities to Japan, where it is converted into coke for use in blast furnaces.

FIRING OF KAIPING COALS.—It may be useful to include some detailed advice as to the best way of firing with Kaiping coals.

The coal chould be spread over the grate in a layer not exceeding four or five inches in thickness. Better results would follow the sprinkling of the fuel in a very light manner in layers of two inches.

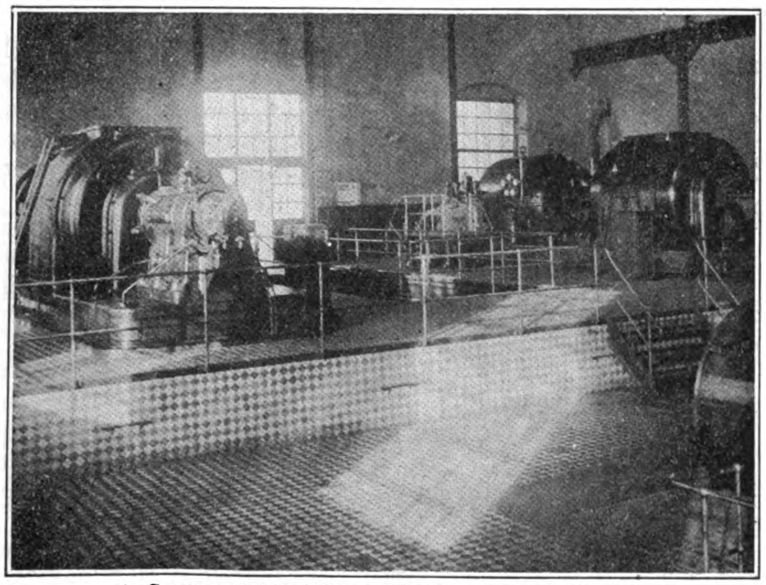
It cannot be too strongly emphasized that light firing is essential to the best results. Difficulty is often experienced in getting these directions carried out by Chinese stokers, who find it more convenient to load the furnaces heavily, in order to have longer rests. The coal should be laid on in small quantities at a time and be spread over a red fire. The frequent use of a slice bar is preferable to the use of a fire rake. A light T slice bar, as per sketch, has been found to give most satisfactory results, as furnace doors are not kept open so long when using the slice, preventing the entrance of cold air to the furnace.

Where tubular boilers, such as those manufactured by Messrs. Babcock and Wilcox, and mechanical stokers are in use, it is essential that the brick arch should be constructed in a suitable way if the best results are to be obtained. For a slow burning coal, such as Kaiping coal, ample space must be allowed for the flame to develop. In the diagram opposite, figure "A" shows a design of brick arch from which good results cannot be expected when using Kaiping coal. It is, however, a simple matter to alter the brick arch to the design shown in figure "B." The trifling cost of such an alteration will be amply repaid by the saving in fuel consumption. In one recent instance, the efficiency of a boiler using Kaiping slack was increased by twenty per cent. by a simple alteration of this kind.

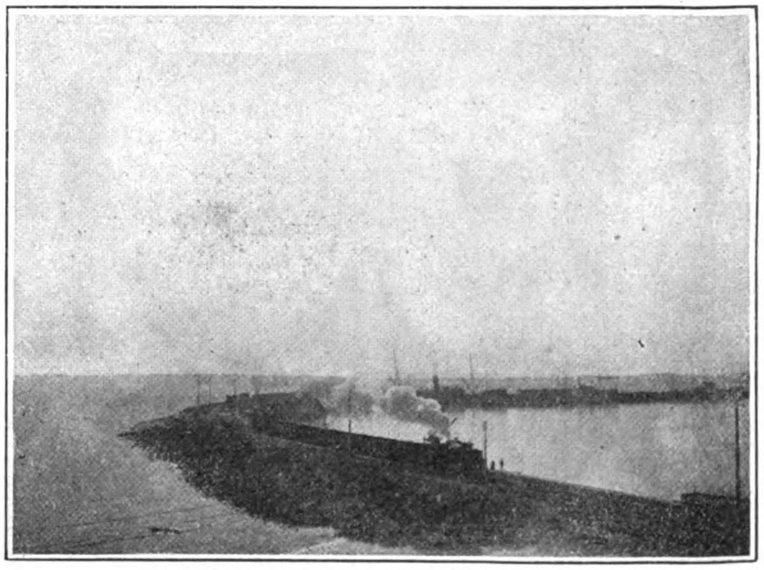
COKE.—The Administration's special coke is a first-class hard, close-grained and clean product, with low percentages of ash and sulphur. No better coke is produced in the Far East. For metallurgical purposes it is in all respects eminently suitable.

Coke is shipped either in bulk or packed in special wicker baskets, which reduce breakage to a minimum.

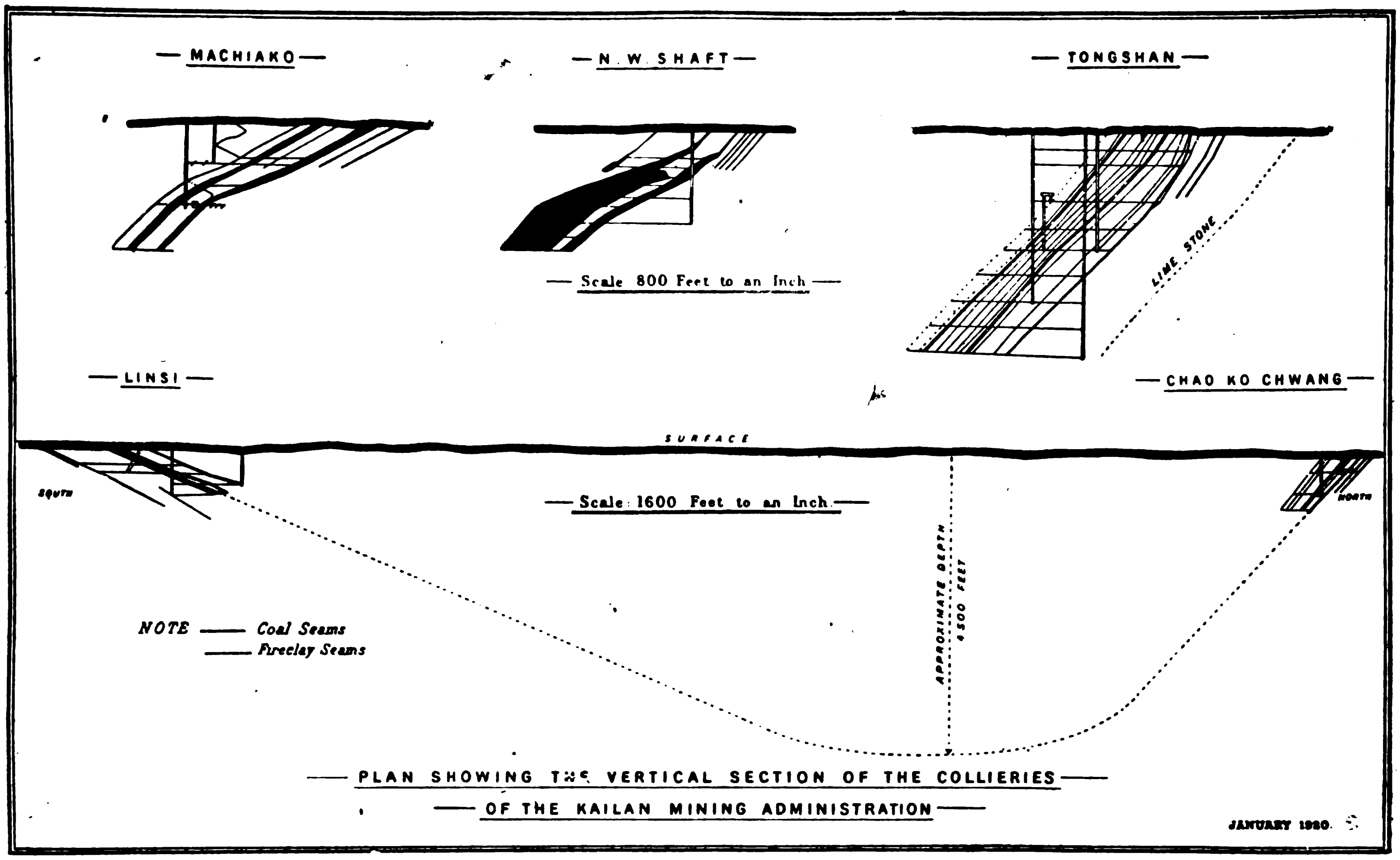
AFFORESTATION.—In consequence of the difficulty of securing adequate supplies of pit props and other timber in North China, the Administration and its predecessors have been engaged in the extensive afforestation of their large holdings of agricultural land in Chihli province. It is hoped that the Administration will be able to commence cutting its own timber within the next year, and at no very distant date to meet the whole of its mining timber requirements from its own forests.



A Corner of Linsi Power Station, Turbo-Alternators



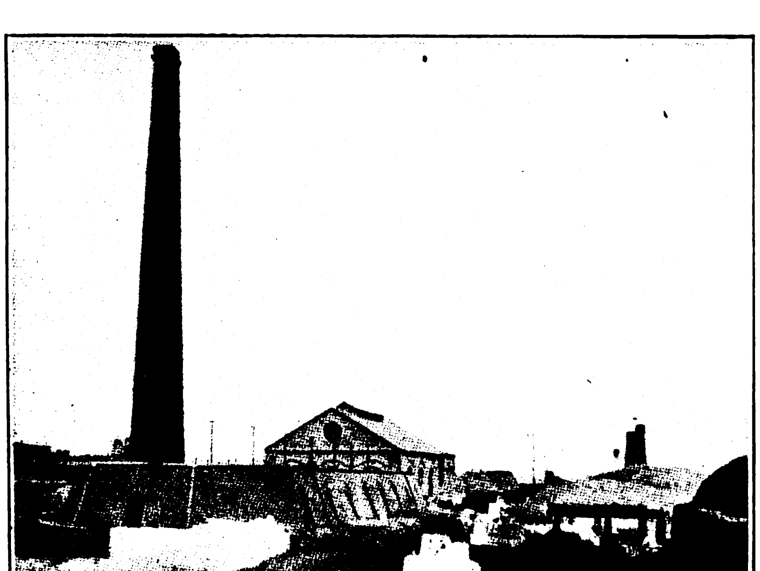
View of Chingwangtao Harbor



PLAN SHOWING THE VERTICAL SECTION OF THE COLLIERIES OF THE KAILAN MINING ADMINISTRATION

Refractory Bricks an Ancient Industry.—Throughout the Kaiping coal basin there were formerly extensive deposits of very plastic clays, capable of vitrification at a relatively low temperature. Hence the district has for many centuries been famous for the coarser forms of pottery. The exhaustion of clays with these properties will shortly terminate one of the world's most Ancient Industries, and the local potters, with their natural talent for clay manipulation, are gradually being employed by the Administration in the manufacture of firebricks.

Extensive Deposits.—The deposits of true fireclays have been practically untouched by these ancient enterprises, and the whole of the outcropping fireclay seams, extending over a distance of about twenty miles, await exploitation, assuring an ample supply of raw material to meet all possible requirements for many years to come.



Firebrick Factory, Tongshan

Class of Clays.—The fireclays generally resemble the best examples of Stourbridge clays. One large seam, however, is especially interesting, in that it contains alumina in the proportion of 44 per cent., with ferric oxide, lime and alkalies in small quantities.

Class of Bricks.—The firebricks manufactured by the Administration are classed as chamotte bricks, as distinct from silica, magnesite, chrome, bauxite and other specialities in demand for particular metallurgical purposes. They are, however, produced in first, second and third grades, which cover so wide a range in chemical analyses, crushing strength and resistance to abrasion, that they will be found suitable for most of the industries requiring refractory clay products in the Far East.

A New Liner for the Orient

The Admiral Line office in Shanghai has received cable advice from their head office in Seattle to the effect that the *s.s. Wenatchee*—the first of the five new passenger liners allotted to this company by the United States Shipping Board, arrived at Los Angeles on March 30th en route for Seattle, from where she will start on her first Trans-Pacific voyage on April 9th.

Representing an investment of $6,500,000, the palatial new liner sailed from New York March 12th. She touched at Havana, Cuba, Panama Canal, Los Angeles and San Francisco. At Seattle, which will be her home port, she will be officially welcomed by the Chamber of Commerce and Commercial Club.

Among the prominent passengers aboard when she arrives at Shanghai April 26th will be Major-General Leonard Wood and staff, Captain Robert Dollar, Ex-Governor Forbes of the Philippine Islands, Mr. Chester Thorne, one of the principal bankers of the Pacific Coast, and also a Director of the Admiral Line, together with several newspaper correspondents.

The result of the trial trip of the *s.s. Wenatchee*, held March 2nd, exceeded expectations. She made as high as 20.5 knots per hour, with an average of 18.75 knots for the trip.

Peace in the Orient

A Possible Factor Against It

"Revolution in the Orient, sweeping like wildfire through all the expanses of Asia—that is the ideal of communism. Revolution, as conceived by the communist movement, is and must be a world-wide affair."—Leo Pasvolsky, *Saturday Evening Post.*

THE trend of events in the Far East, the imbroglio in which we are seemingly to become involved, infer that unconsciously or wilfully are we playing into the hands of Bolshevism. To dissent from this view is to play the part of the ostrich. It must be faced. Were world progress not better guaranteed by a continuation of industrialism, and world progress in this instance intentions actual benefits for a majority, then Japan, Great Britain and the United States could well afford to don blinkers while the march of fanatism moves by. It moves by, we are told, and existing conditions cannot afford to look on in casual fashion. Already violence asserts itself. The veritable Hun is knocking at the door and in no embarrassed manner. The noise has been heard, but we have believed it to be the blusterings of a harmless giant drunkard, reeling in his self-intoxication. But now has come a warning, a real warning to which we must take heed if we are not to suddenly find ourselves enmeshed inextricably. The warning comes from the pen of Leo Pasvolsky. His name is not altogether inspiring, that is to say the sound of it, but, to quote the Shakespearean contribution, "What's in a name!" And we must overlook the fact that our tongues have become somewhat tied as we pronounce the name Pasvolsky, more especially when his pen discloses so much that seems surely to be truth.

We are informed that in China there can be no agrarian movement such as was a great factor in the Russian revolution for the reason that there are no extensive holdings, also that there is no actually felt exploitation of the people. As this is written comes news that Lenin admits failure of his Soviet scheme. A despatch to the New York *Herald* states that the dictator fears he has "Become respectable" also that he now believes that farmers and capitalists must own land privately. It is intimated that Krassin, the Soviet trade mission head to London, will lead new business interests which will be allowed some power. This is astonishing if it is true more especially since Lenin is further credited with the statement that "nobody was so mad as to expect world revolution, and therefore, agreements with the Bourgeoise governments were indispensable."

There were no need to continue this exposition of the Bolshevik menace to the peace of the Orient if the report above recorded were infallible. No menace would exist, for a trading Russia could not thrive if Soviet propaganda and schemes to overthrow the equilibrium of the world emanated from its headquarters, but there is cause to be dubious and the report might be one of many similar that have found their way into the world press to be contradicted or ignored as untruthful in the course of time. Each has its origin and purpose which is either entirely frustrated or partially successful. To discontinue opposition to a seeming or obvious menace is, under these conditions, to invite a possible disaster. Bolshevik intentions in the Far East as expounded or explained by Leo Pasvolsky will thus continue in their presentation.

After dealing with the agrarian movement and the exploitation of the people the question is asked "What must Russia do then to persuade a change in China's status ?" Comes the reply, "Soviet Russia is trying to show China that the chief cause of her present state of affairs lies in the fact of her economic dependence upon the particular power which holds the protectorate or control over her." It is the Soviets' task to render sufficient assistance to a movement which will liberate China so that she may exact from her in return pledges to accept a Soviet form of government once their own independence or complete liberation is achieved.

There then follows considerations upon which the Soviet plan in the Far East was built. In detail they are: China has for her neighbors two powers which are antagonistic to each other—namely, Japan and Soviet Russia. As long as the Anfu group remained in power and continued its pro-Japanese orientation the chances of any influence in the affairs of China that could be exerted by Soviet Russia was very small. On the other hand the policy pursued by the Anfu group never became popular among the masses of the people in China. There had been a growing and wide-spread opposition to the Japanese. This opposition was counted upon by the Soviet agents as a possible instrument for the overthrow of the pro-Japanese régime. They expected that if properly stimulated and directed this popular opposition would eventually transfer its resentment against the Japanese to the whole Anfu group and its régime, fastening upon it the blame for the Japanese domination. If such transferred resentment could result in the overthrow of the Anfu régime, it was reasonable to expect, according to Soviet diplomacy, that its successor in power, having broken with the Japanese orientations, would have to seek a rapprochement with the other of China's neighbors—that is, with Soviet Russia.

It is claimed that the Soviet diplomacy has been successful in carrying out practically the whole of this plan. It is not improbable that the state of affairs in China (up to this point) had arrived through other causes, so happening as to have been the possible result of Bolshevik machinations. There is reason to believe so. The Anfu club is extinct, but intrigues other than Russian might easily have been the cause, and there are some students of Chinese affairs who will claim that they were. This article does not purpose to make any definite assertion regarding the point. Russian intrigue might have been responsible, and for this reason the Soviet's stated policy, *vis-a-vis* China, will be subjected to further discussion.

According to Mr. Pasvolsky the Soviet diplomats interpret the removal of the Anfu element as signifying unquestionably the imminence of a definite Chinese orientation in favor of, and in the direction of, Soviet Russia. To the Soviet way of thinking a break with Japan will come soon. Refusal on the part of the Chinese government to continue recognition of the Russian ambassador remaining in Peking after the overthrow of Russia's provisional government was considered logically a preliminary step to the negotiations which China was expected to inaugurate with Moscow.

Following upon the lead of Great Britain in negotiating a trade treaty with Soviet Russia the Chinese have themselves been in close touch with the Bolsheviks as is evidenced in a message from Peking which advises that at the suggestion of Dr. Wellington Koo the Chinese government contemplates receiving Soviet delegates sent from Moscow holding a similar position to that of Mr. Krassin's mission to London. This is significant, and is a point in favor of

the assumption that eventualities in China have taken shape as a result of Soviet initiative. Before this transpired, another event to encourage Soviet Russia was the Chinese mission to Moscow headed by General Chang See-lin, one of the younger followers of General Wu Pei-fu. A memorandum was delivered to this Chinese military individual last October, so it is stated in the Pasvolsky article, and in it were intimated the basic conditions of the treaty which the Soviet was willing to sign with China. The memo was transmitted to Peking and if the Soviet mission to Peking as recommended by Dr. Wellington Koo is a result, then there is more reason to believe that the trend of events in China is a result of Soviet instigation.

Continuing his article Mr. Pasvolsky says that the Anti-Japanese section in China perceives a possible encounter with Japan. It is what the Soviet desires and under the Soviet's guidance and assistance. She is trying to push China into such an eventuality, it is stated. The Chinese delegate, Lai, at the second Congress of the Third International is reported to have said, "China was refused everything at the Paris Peace Conference." Strikes and discontent are claimed to be the result. Certain it is that a student upheaval followed upon the peace conference, the cry "Shantung for the Chinese" making itself heard throughout the treaty ports, but taking everything into consideration there is no real discontent in China although the Bolsheviks would have the world believe so. At all events, the political situation in China, resulting from the enmities aroused by the sympathies and antipathies towards the Japanese is just the kind of opportunity that the Third International wish for. Mr. Pasvolsky says that the stage is rapidly being set in China for the possible tragic farce of a revolution that may result in the establishment there of a Soviet state. Those who believe that they understand China and the Chinese will not admit that the country can be stirred to resent or to take part in any movement which may come about through the aspirations of a military or political party. They will no doubt feel that a lethargic and indifferent attitude will be presented to any overtures designed to convert the main body of the people, peace-loving and contented as it is. Whatever may happen in China, even a complete reversal to a control over the country as was exercised in days of yore, apathetic acceptance of the state will show itself on the surface, undisturbing, in the main, the every-day, matter-of-fact routine that has been in vogue for the last five thousand years. Other students of Chinese affairs may coincide with Mr. Pasvolsky's views. They might believe with him that the storm of a communist revolution which he says is brewing so ominously in China at the present time might be so effective that should it break out, no better signal or stimulus could be desired for the other countries of the Far East, India, and the countries and states nearer China. If he and they are correct, and there is a possibility of their being so, sufficient stress cannot be laid on the necessity to combat the menace by every possible means. A disturbance of this sort in the East would undo the work that our forerunners have so diligently and so splendidly built up (if the inculcation of modernism is considered a worthy endeavor), to install in its place . . . ? It is yet to be conclusively shown that the drastic measures of the Bolsheviks have benefited the majority as effectively and lastingly as did the disciplined and orderly methods of their predecessors. Peace and order is what the world, or the people and not the governments of the world it must unfortunately be added, are most desirous of settling down to. Fed to the teeth with intrigue, revenge, spite and all the other exhibitions of mental unbalance, the people of the world will soon put the brake to the activities of their representatives, and will demand a just and equitable settlement of outstanding difficulties. Unless they do so a sort of despair will very probably drive a reluctant populace to imbibe the narcotic that has made the Russian giant reel. According to this maniac there are two storm centres in the world at the present time—Afganistan and China. Set going, these whirlwinds might catch up the whole world and precipitate it into a bedlam. It is not improbable, but the sober-minded, the calm and purposeful, of which there are fortunately no small number, will set their faces to the menace which might actually exist. The warning is sounded. It might be another "Wolf" cry of Æsops' fable, but it is well to harken unto it in case the wolf does actually exist. Contending that it does, Mr. Pasvolsky says: The Soviet government may talk about placing portions of Siberia at the economic disposal of the United States or Japan. It may offer advantageous concessions, it may insist, as it has been doing, that the buffer state of Eastern Siberia should organize political forms of the kind that would make foreign capital, American and Japanese particularly, feel itself at home there. This is termed bait to credulous foreigners. If the Soviet government gains a footing in China, what will become of the open door policy and all the rest of the Far Eastern policy to which the United States is pledged in furtherance of its legitimate and logical national interests ? The inference arrived at through Mr. Pasvolsky's question is obvious.

He further tells us that Russia's activities in Asia are too extensive to be merely efforts to frighten the powers into dealing with her. They are not diversions, but represent serious steps to which the Soviet stands committed. Finally he says : "Unless the Soviet régime and the Third International, which depends upon the continuance of this régime for its own existence, collapse, the fate of the world's civilization will indeed hand in the balance when Asia's vast millions, goaded and stung into fury by communism, will really rise—a veritable Hun at the gate of Western civilization."

The lesson learned in 1900 will never be forgotten. The foreigner in China knows that while the bulk of China's millions are peace-loving, a fanatical re-action is not impossible. Extremely difficult to rouse is the old patriarch, and even in the midst of fanatism he looks on mildly indifferent. It is not he who takes part in the debacle but it is his indifference which makes it possible. Hence, if the possibility of menace has not been obliterated by Lenin's reported conversion, it were well to take heed, to observe with watchful eye, and to combat with skill and fervor, if the storm, which the weather profit informs lies just below the horizon, rises and threatens to envelope us.

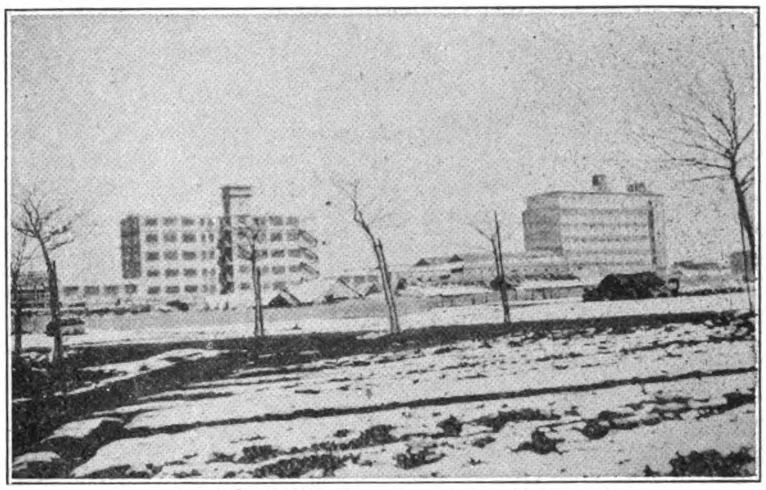
Famine Prevention Seen in Railway Development

Park-Union Views

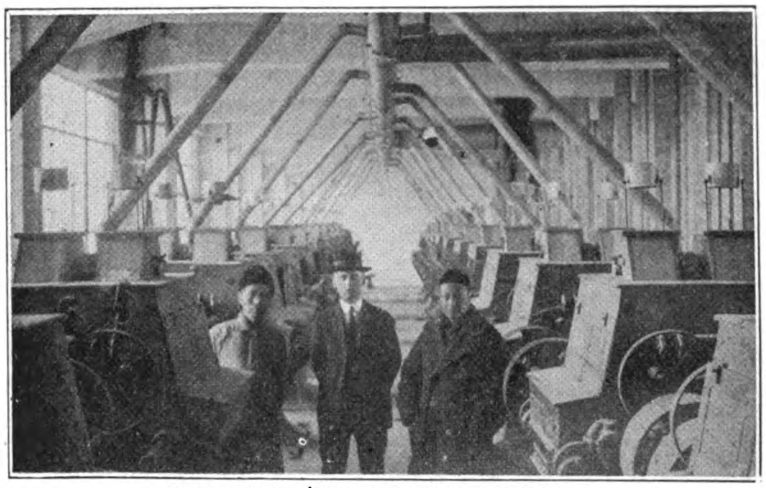
DISCUSSION of trade conditions and opportunities in China gives place to consideration of the appalling fact that 40,000,000 Chinese in five provinces are suffering from famine, with the prospect that 15,000,000 will die of starvation during the course of the winter. Such a situation is beyond the power of mind to grasp. It is made worse by the fact that practically the only country of great wealth in a position to give aid is the United States. Early in December President Wilson appointed a nation-wide committee of men and women, headed by Mr. Thomas W. Lamont, to direct such relief as the American people may extend. This grave situation in China, at a time when she is assuming a new and more important place in foreign trade activities, naturally suggests that it is through the opening up of that vast country by modern means of communication and by making it an accessible mart throughout that future famines will be prevented.

The announcement in Japanese advices, of the proposed improvements to the South Manchurian Railway, is a promise of relief and prevention for future famines. The improvements include the purchase of engines and cars, acquisition of steamers and launches for the Shanghai line, and new wharves and harbor works.

Other projects proposed include more smelting furnaces at the Anshan Iron Works, development of the Fushun copper mines, extension of electric light works in Dairen, Mukden, Changchun and elsewhere, and the extension of existing public works, experiment stations, warehouses, hospitals, schools, office buildings and dwellings for officials and employees.



Fou Sing Mills Nos. 2 and 8 at Shanghai



Roller Mills Floor, Fou Sing Mill No. 8

Notes on Modern Flour Mills in China

THE modern flour milling industry in China dates from 1897, the majority of the mills being under Chinese management. The war lent an impetus to the growth in China. China produces probably about 200,000,000 bushels of wheat a year, which is about one-quarter as much as the United States produces. Transportation is an important factor in the development of the Chinese flour-milling industry, as can readily be understood in view of the fact that the northwestern provinces in China are producing wheat by the tens of millions of bushels, which, because of inadequate transportation facilities, cannot find its way into the markets of eastern China, where it can command three and four times as much. It costs from 15 to 20 cents a ton-mile for transportation in Shensi by native methods, as compared to seven-tenths of a cent per ton-mile for transportation for wheat on American railways. The more wheat the people of Shensi raise the worse off they are, for the reason that it becomes a drug on their own market. Shensi possesses some of the most fertile soil in all of China, which has been under cultivation for upward of 3,000 years, and is still producing 30 or 40 bushels to the acre by intensive methods of cultivation. Where there are modern transportation facilities in the wheat-producing sections of China, the flour-milling industry is developing rapidly, in spite of the fact that the Chinese miller experiences difficulty in buying his wheat, since he is forced to purchase from numerous middlemen, who buy from the small growers.

In Shanghai and vicinity there are 22 modern flour mills, with an aggregate daily capacity of 10,500 barrels. In Manchuria there is a similar number. In all of China there are about 123 mills, representing an investment of about $15,000,000. There are tens of thousands of household stone cereal grinders throughout China and hundreds of old-style millstones propelled by water wheels or animal power. In 1918 China exported flour to the value more than $10,000,000, which is about the equivalent of its former normal imports of the American product.

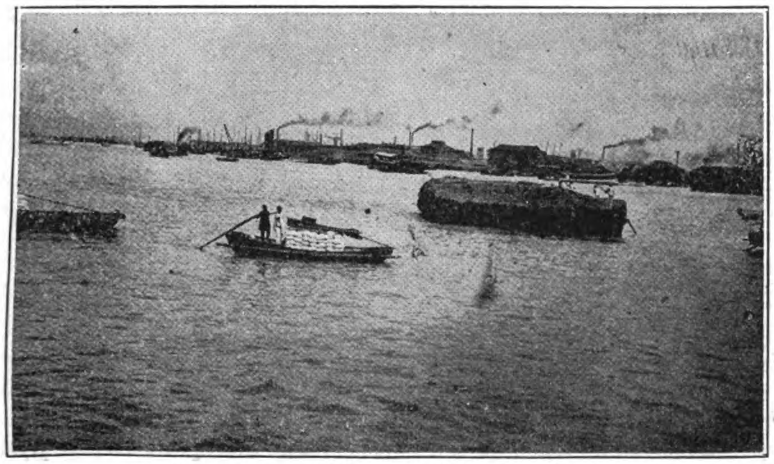
The industry is in greatest evidence at Shanghai, followed by Central China and Manchuria, North China having but fourteen mills.

In Central China, 51 mills are in operation, the capital invested totalling Tls. 5,423,000 and $926,000. It is said that the daily output reaches 40,800 sacks. The industry is most flourishing in Kiangsu, followed by Hupeh and Szechuan.

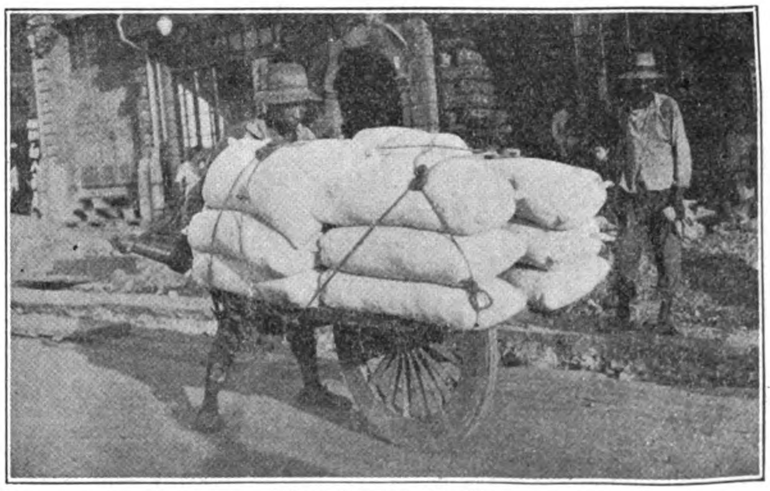
Something like 50,000 *shih* of wheat is brought yearly to Changteh, the weight of one *shih* being different as in the case of Honan, according to the place of production.

There is only one modern mill in Kaifengfu, named Yung-Feng Flour Mill, Ltd., the industry in the province being mainly conducted under the native process.

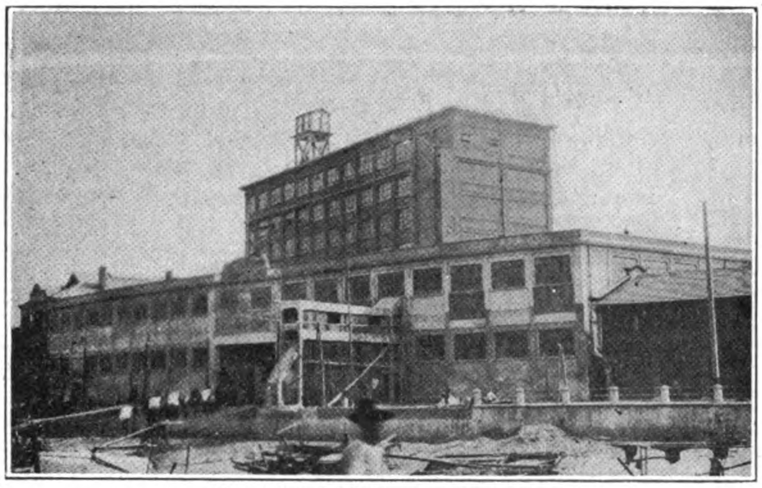
The first modern flour mill was established in Szechuan in 1909, which was founded at Changshow Hsien in commemoration of prohibition of poppy cultivation in the province. The company concerned is capitalized at $170,000, and the mill is capable of turning out 600 sacks of excellent flour per day. Besides, there are two mills, one at Chengtu and the other at Chungking. The former is located in the same building as a soap factory just outside the East Gate. It is a small mill, a sum of only Tls. 9,000 being



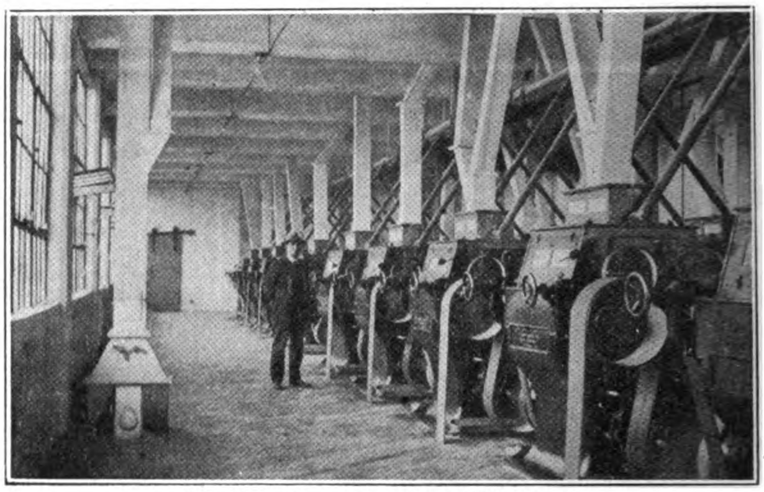
Boat Load of Flour on Whangpoo River



Flour for the Dealer



Fou Sing Mill No. 7, Shanghai



Grinding Floor, Fou Sing Mill No. 7

invested, and is capable of producing 75 sacks of flour per day, each containing 50 catties.

There are 14 modern mills in North China, with a capacity of 15,000 sacks in 24 hours.

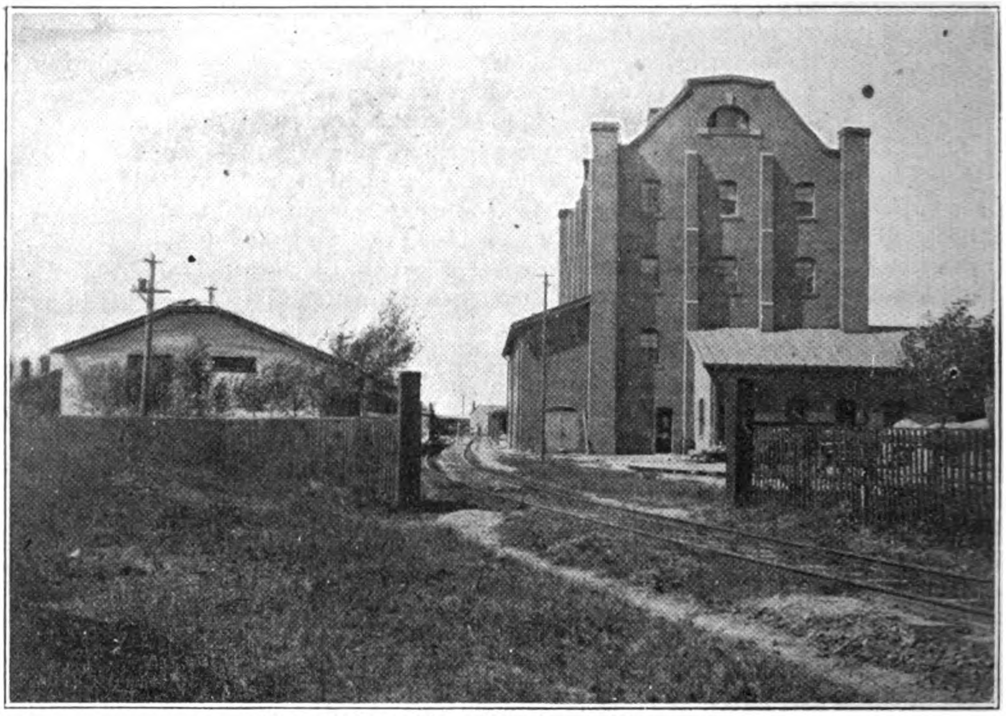
The aggregate capacity of all the flour produced in Shanghai is estimated at about 120,000 fifty-pound bags per day.

Mow Sing Flour Mills...	30,000	bags
Fou Sing Flour Mills ...	40,000	,,
Foo Foong Flour Mill	10,000	,,
Chang Foong FlourMill	10,000	,,
Chiu Foong Flour Mill	10,000	,,
Wah Foong Flour Mill	3,000	,,
Sung Dah Flour Mill ...	2,500	,,
Li Dah Flour Mill ...	2,000	,,
Hsin Wah Flour Mill ...	4,000	,,
Other mills	9,000	,,
Total	120,000	bags

Wheat can be purchased locally, but most of the mills obtain their raw materials from all parts of China through their own agents. Most of the mills are equipped with American machinery and some, such as Fou Sing No. 7 and No. 8 mills, are under expert foreign supervision.

The analysis of a prominent Shanghai brand, typical of the others is as follows :

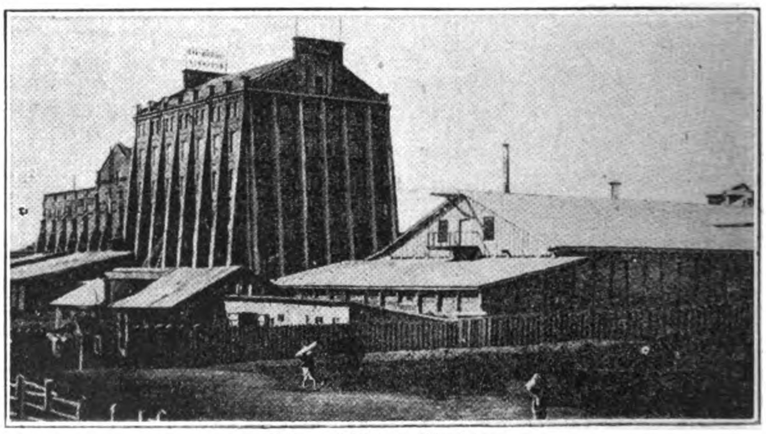
Moisture ...	13.50%
Ash ...	0.64%
Fat ...	0.67%
Protein ...	11.25%
Nitrogen ...	1.80%
Raw Fibre ...	0.26%
Carbohydrates (starch) ...	73.68%
Gluten (by calculation) ...	8.90%



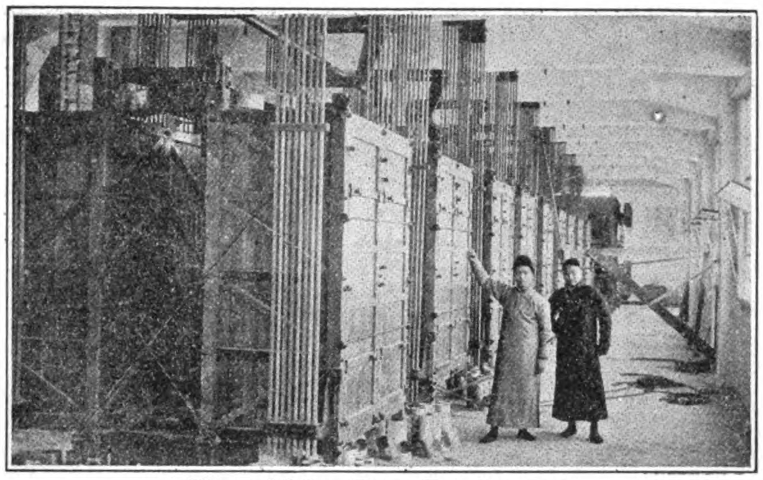
Flour Mill at Changchun, South Manchuria

The Fou Sing Flour Mill No. 8, illustrated in this article, has a capacity of 12,000 bags per day of 24 hours. This is the latest mill imported for a group of mills known as Fou Sing Nos. 1 to 8. These eight mills have a combined output capacity of about 60,000 bags and are under the management of Mr. T. K. Yung. Under

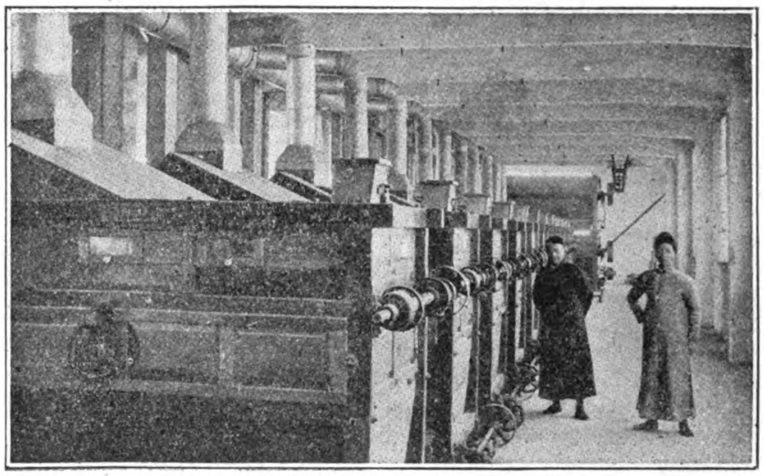
Manchurian Milling Co., Harbin



Flour Mill at Harbin

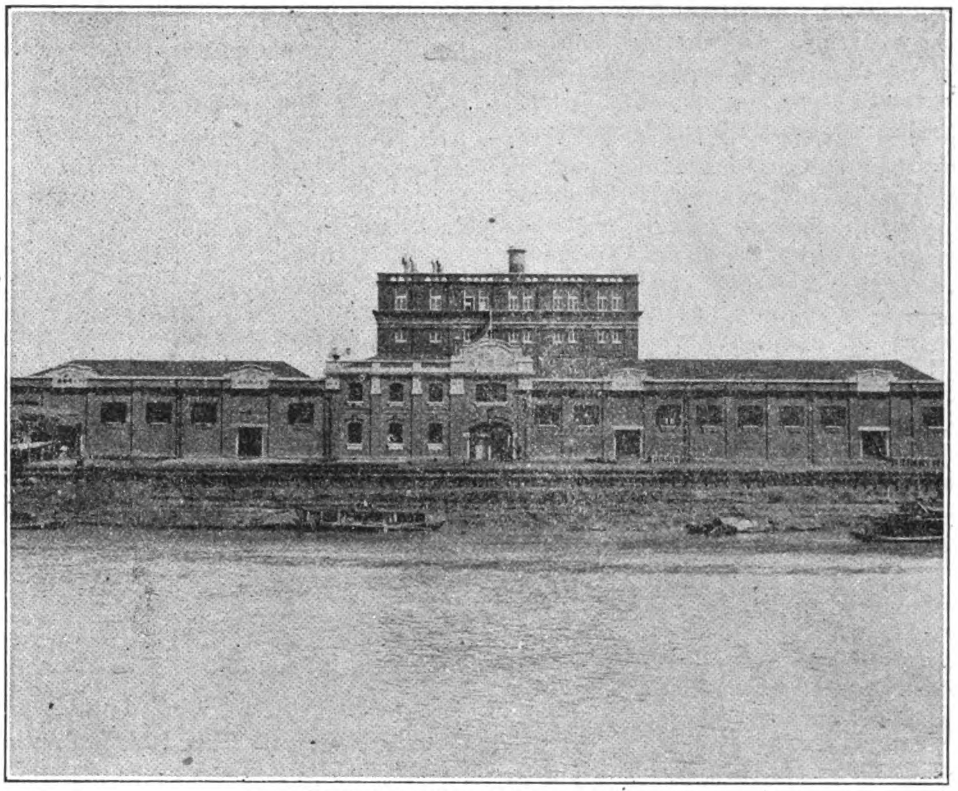


View of Sifter Floor, Fou Sing Mill



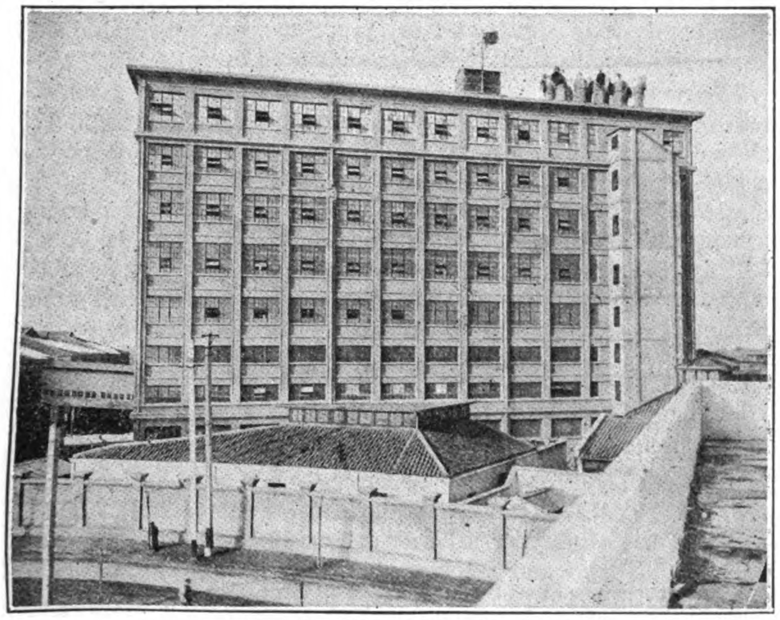
View of Purifier Floor, Fou Sing Mill

the same management are other mills located in Wusih, Hankow and Tsinanfu with about 20,000 bags capacity making a combined output of 80,000. The mill illustrated is under the supervision of Mr. N. G. Sanborn who was sent out by the Manufacturers Nordyke & Marmon Co., Indianapolis, Ind. This latest mill is equipped with square sifters in contradistinction from any mill hitherto imported into China, all of which are equipped with level sifters. The electric drive is direct and does not require a 60-in. belt with which two other mills of the same size are driven. It also is equipped with metal elevators and shunting throughout a feature that insurance companies take into consideration. Of the mills, hereunder enumerated, two only are of English manufacture and one German, all others are of American manufacture.

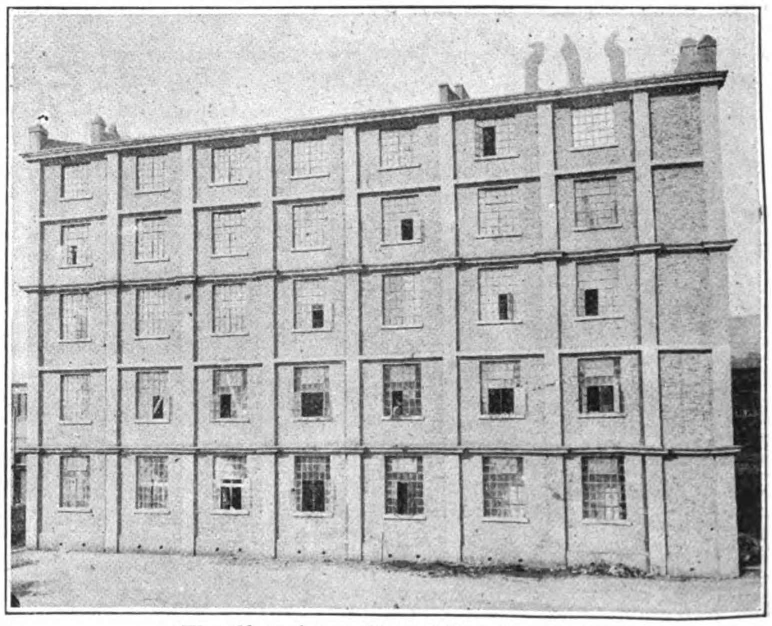


A Fou Sing Flour Mill at Hankow

The centre of the flour mill industry is in Shanghai, which has 22 mills with an output capacity of about 94,000 bags each 50-lbs. per day. The next largest is Wusih with six mills producing a total of 23,000 bags. Hankow has four mills producing a total of 13,000 bags.



A Fou Sing Flour Mill, Shanghai



The Changfoong Flour Mill, Shanghai

		Total
Tientsin	4 mills	12,000 bags
Changchun (Manchuria)	4 ,,	10,400 ,,
Tsinanfu	4 ,,	12,000 ,,
Tsingtao	1 ,,	3,000 ,,
Changsha	1 ,,	1,700 ,,
Hai Chow	1 ,,	4,000 ,,
Wuhu...	1 ,,	1,600 ,,
Kirin	1 ,,	2,000 ,,
Tongchow	1 ,,	2,000 ,,
Chin Kiang Poo	1 ,,	1,600 ,,
Kou Yue	1 ,,	2,000 ,,
Peking	1 ,,	1,600 ,,
Paotingfu	1 ,,	1,500 ,,
Canton	1 ,,	600 ,,
Changchow	1 ,,	2,000 ,,
Chinkiang	1 ,,	2,000 ,,

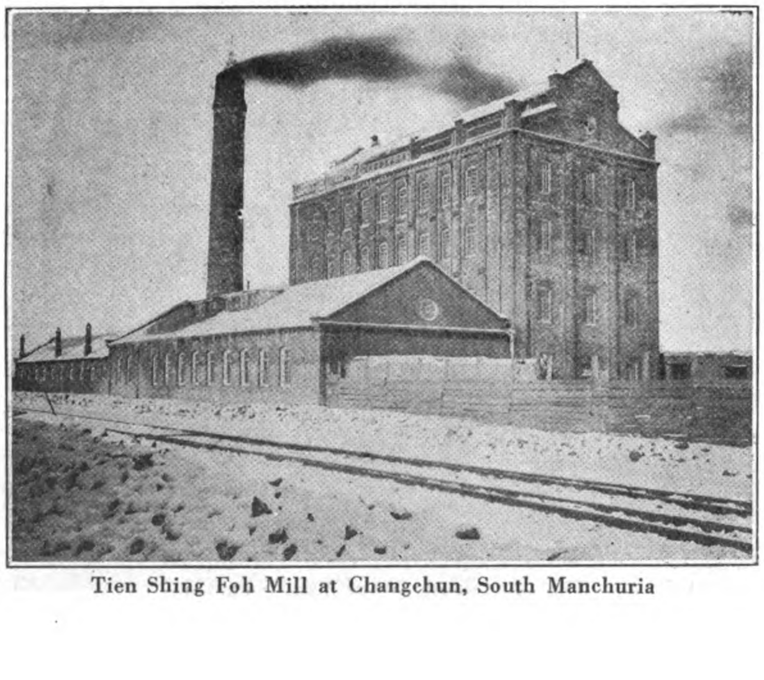
Mills above mentioned give a grand total of 190,000 bags. During and since the war a considerable quantity of flour has been exported to Europe. During and since the war the Southern markets have depended upon supplies from Shanghai and Japan. Japan has flour mills with a total output approximately 100,000 bags and depends for her wheat supply mostly from Manchuria.

Details regarding the six flour mills in Wusih are given hereunder. The Mou Sin Flour Mill was established in 1901. It suffered heavy losses at the beginning but the last ten years its trade has increased yearly. The annual production of the six mills amounted to about 7,000,000 bags, consuming 3,400,000 piculs of wheat yearly.

Name	Location	Capital	No. of Steel Mills
Mou Sin	Tah Pao Tong West Gate	$500,000	36
Mou Sin Br'ch	Wei San Bund N. Gate	$300,000	24
Kiu Fen	Yin Hu Tsong N. Gate	$400,000	24
Kui Fen Br'ch	Yin Hu Tsong N. Gate	$250,000	12
Ta Loong	Poo Tie Bund E. Gate	$250,000	12
Chang Fen	Ting Hon Li	$300,000	12

Flour Mills in Manchuria

Flour milling in South Manchuria has been slower in development than in North Manchuria. Formerly about 80 per cent. of the aggregate demand for flour in South Manchuria was supplied by the United States and Shanghai. But since the abolition of the free trade zone on the Russo-Chinese frontier in 1913, the flour mills in North Manchuria started as if with one accord a vigorous canvassing campaign in South Manchuria, and in consequence, a keen competition ensued between North Manchuria and other parts. What from the freight consideration and what from the taste of the Chinese masses, etc., foreign imports found themselves outmatched by North Manchurian wares gradually, and they now retain only a semblance of foothold at Dairen, Yingkou, Antung, etc. Thus, the stimulus given by the flour milling industry of North Manchuria has leavened up flour milling in South Manchuria. The prominent flour mills in South Manchuria are as under :—



Tien Shing Foh Mill at Changchun, South Manchuria

Established	Located at	Capital	Consumption of wheat per day
Manchuria Flour Mill, Ltd. (Japanese) December, 1906	Tiehling	Y.3,000,000	500 *koku*
Manchuria Flour Mill, Ltd. (Japanese) November, 1912	Changchun	—	700 *koku*
Continental Flour Mill, Ltd, (Lately incorporated with Manchuria Flour Mill) (Japanese) July, 1919	Dairen	Y.1,000,000	—
Sino-Japanese Flour Mill (Japanese)	Liaoyang	Y. 20,000	—
Asia Flour Mill (Under Sino-Japanese joint management) October,1919	Kaiyuan	Y.3,000,000	Machinery under trial operation
Yuchangyuan Flour Mill, Chinese, 1914	Changchun	Tls. 300,000	600 sacks per day
Fukuda Flour Mill, Japanese, 1914	Fushun	Y. 5,000	1,000 *kin* per day
Chienchinchai Flour Mill, Japanese, 1911 ...	Fushun	Y. 4,000	4,819 puds per day
Temonchang Flour Mill, Chinese, 1814	Ssupingkai	Y. 3,000	3,150 puds per day
Chuantai Flour Mill, Chinese, 1914	Liaoyang	—	—
Koshunho Flour Mill Chinese, 1910 ...	Kirin	50,000 roubles	2,240 puds per day
Hengmao Flour Mill, Chinese, 1916	Kirin	320,000 roubles	2,800 puds per day
Seshankoku Flour Mill Russian, 1910	Kwanchengtzu	80,000 roubles	600 puds per day

The Manchuria Flour Mill, Ltd., is looked upon as a model one.

This mill was founded on a capital of Y.1,000,000 in December, 1906. Besides the manufacture and sale of flour, the company is engaged in all auxiliary businesses, and also deals in cereals on a commission. The Tiehling factory had construction work started at Tiehling in July, 1907, and in May, 1908, on the completion of the equipments, the new factory commenced operation.

This was the first plant of the kind under Japanese management in South Manchuria. At the outset, it was difficult to make both ends meet, but, since the company secured the Yokohama Specie Bank Special Loan of Y.200,000 in 1910, business took a favorable turn and in November, 1912, the new branch factory at Changchun was finished, and it was opened for work in June, 1913. In 1918, the company's capital was increased to Y.3,000,000. Branch factories were erected on the most up-to-date plan at Harbin and Tsinan. All the necessary machinery was imported from the United States. The Harbin factory was finished in May, 1919, and the Tsinan plant in January, 1920.

The Company, far from satisfied with these extensions, held an extraordinary general meeting of the shareholders at Tokyo in March, 1920, and passed the resolutions amalgamating the North Manchuria Flour Mill and increasing the capital to Y.4,250,000. In April of the same year, another extraordinary general meeting was held at Tokyo and resolved upon the incorporation of the Chosen Flour Mill, Ltd., and the Continental Flour Mill, and further upon the increase of the capital to Y.5,750,000. This company

is in the continued ascendancy and is expected to dominate the flour market of all Manchuria in course of time.

The main factory at Tiehling has machinery of the American Wolfe system of 220 horse-power installed, which is actuated by steam. It is capable of crushing 500 *koku* of wheat procured from North and South Manchuria usually at the rates of 65 per cent. and 35 per cent. respectively.

The machinery of the Changchun plant belongs to the same system and is driven by electricity of 250 horse-power. It possesses the producing capacity of 2,400 sacks per day.

The Tsinan factory is similarly equipped mechanically and can put out 3,800 sacks (or over 140,000 *kin*) of flour per day.

For the latter half of 1918, the company declared a dividend of 12 per cent. per annum in addition to the special dividend of 14 per cent.; for the first and second half of 1919, a dividend of 120 per cent. with the special dividend of 18 per cent. and 12 per cent. with the special dividend of 38 per cent.; and for the former half of 1920, 12 per cent. with the special dividend of 38 per cent.

In North Manchuria

The centre of mechanically-produced flour in North Manchuria is Harbin. The first flour mill at Harbin under the style of the Manchuria Flour Mill No. 1 was launched under Russian management on the capital of 348,000 roubles in 1902. A real activity in this line of enterprise dated from 1903, in which the Chinese Eastern Railway was thrown open to traffic all over its lines. A rapid development was noted. In about ten years' time, that is, in 1912, the total outputs of all the Russian flour mills, according to the investigation of the Russian chamber of commerce, Harbin, reached 5,800,000 puds with the consumption of 7,800,000 puds of wheat. The market for North Manchuria flour was enlarged in South Manchuria, and after the outbreak of the European war, the export into Russian territory was increased, and an uncommon flush appeared when it was dampened by the revolution in Russia, the consequent fall of roubles on the exchange market, and the general economic depression.

The following table gives the chief mills in North Manchuria :—

	Nationality	Located at	Established at	Capital roubles	Producing capacity per day puds
Russian Flour Mill ...	Russian	Harbin	1911	500,000	4,200
,, branch mill	,,	,,	,,	—	5,600
,, branch mill	,,	Shuang-chengpu	,,	—	3,500
Shuanghosheng Flour Mill (formerly Dorinjia Mill)	Chinese	Harbin	1908 (bought in 1915)	400,000	2,450
Shuanghosheng Flour Mill (formerly managed by Gobies and Pazanoff)	,,	Shuang-chengpu	1911 (bought in 1916 for 45,000 roubles)	127,000	3,500
Torkansk Mill ...	Russian	Harbin	1909	400,000	3,150
Nijnaya Mill ...	,,	Shuang-chengpu	1909	80,000	600
Kuangyuansheng Mill (formerly Manchuria Flour Mill No. 1) ...	Chinese	Harbin	1912 (bought in 1915 for 431,000 roubles)	80,000	840
Kazatkin Mill ...	Russian	Harbin	1913	100,000	1,540
Manchuria Flour Mill (Harbin branch) ...	Japanese	,,	1919	—	—
Moschiisky Mill ...	Russian	,,	1912	100,000	840
East Asia Flour Mill...	Chinese	,,	1913	90,000	1,400
Chengtaii Mill ...	Chinese	Fuchia-tien	1913	250,000	1,540
Chengfahsiang Mill ...	,,	,,	1908	200,000	1,260
Irkoutsk Mill	Russian	Harbin	1909	400,000	3,150
Skidelsky Mill ...	,,	,,	1903	80,000	000
Samsonovich Mill ...	,,	,,	1912	60,000	400
Techikoff Mill... ...	,,	,,	1908	100,000	840
Isaeff Mill	,,	,,	1908	80,000	420
Robachiaeff Mill ...	,,	,,	1906	70,000	350
Amur Company ...	,,	,,	1910	100,000	850
East Asia Mill ...	Chinese	Ssuchia-tzu	1911	120,000	910
North Manchuria Flour Mill ... ... (amalgamated with Manchuria Flour Mill)	Japanese	Old Harbin	1913	500,000	2,800
Branch mill of the above...	Japanese	Harbin	1919	—	700
Imienpo Mill	Russian	—	1908	100,000	2,100
Changning Flour Mill	Chinese	Ninguta	1908	200,000	1,400
Yushun Mill	,,	,,	1904	150,000	1,206
Hsinhua Mill	,,	,,	1913	100,000	900
Funing Mill	,,	,,	1913	200,000	1,700
Yushunho Mill ...	,,	,,	1904	150,000	1,260
Yungchi Mill	,,	Aigun	1914	120,000	1,000

A glimpse at the North Manchuria Flour Mill, Ltd., the only plant in North Manchuria under Japanese management, will give an idea of the industry in North Manchuria. This company was established at Harbin in August, 1913, with a capital of Y. 500,000, with a branch office at Tokyo. Business was opened in November, 1913. Dividends have been as follows:

	For				
1918	first half		15%	per annum.	
	latter half		10%	,,	
			15%	,,	special dividend
1919	first half	ordinary dividend	10%	,,	
		special dividend	15%	,,	
	latter half	ordinary dividend	10%	,,	
		special dividend	20%	,,	
1920	first half	ordinary dividend	10%	,,	
		special dividend	20%	,,	

With the favorable progress of the enterprise, the company planned to build a new mill, and by April, 1919, the installation of machinery had been completed and the new factory was opened to operation on May 1. The actual producing capacity is said to be 700 barrels and the new plant is acquitting itself well. As above stated, the company decided to amalgamate with the Manchuria Flour Mill, Ltd., Tiehling, at an extraordinary general meeting of the shareholders held in March, 1920.

The flour milling circle at Harbin received a severe blow from the withdrawal of the Japanese troops from Siberia, and that, of the mills under management of other than Harbin people, there were only two possessed by Military Inspector Chang Tso-lin, that had not suspended work, all the rest being as good as shut down.

As to the quality of flour put out at the Russian mills at Harbin, the table of analysis appended below may be of value :

Flour	Water	Nitrogen	Fat	Percentage of Sugar	Dextrin	Starch	Ash
1st grade ...	13.28	10.14	0.90	2.40	3.24	69.22	0.50
2nd grade ...	13.40	10.08	1.30	2.25	3.17	68.87	0.40
3rd grade ...	12.95	9.84	0.86	2.38	3.48	69.52	0.46
4th grade ...	12.60	11.06	1.28	1.78	4.02	66.63	0.95
5th grade ...	13.30	10.95	1.19	1.84	4.11	66.71	0.07

Flour milling in North Manchuria used to lie mainly under Russian management, and in both capital amount invested and

technical skill, the Chinese could not hold a candle to the Russian plants. Since a few years ago, Chinese mills of extensive proportions have been founded at Harbin and elsewhere in quick succession, and now their influence is not at all to be despised.

Looking into the cause of this sudden rise in importance, the enfiltration of considerable German capital has been brought to light. For instance, the three mills at Harbin such as the Chengfahsiang, the East Asia, and the Chengtaii ostensibly under Chinese management, are all financed with German capital. The nominal Chinese managers hail from Shantung, and from this fact, it may be inferred that the Germans set up in business at Tsingtao and elsewhere in Shantung employed Chinese for agents to the end of expanding their own sphere of operation without attracting others' attention.

An idea of the rapid expansion of wheat-growing in Manchuria may be gathered from the size of recent shipments out of the port of Dalny for the European market. During the first week of August, 1920, 30,000 tons were exported by Suzuki & Company, and 10,000 tons by the Horyu Company, stocks of over 400,000 tons were stored at Dalny ; about 100,000 tons were held in northern Manchuria and 150,000 tons have accumulated at the various stations along the line of the South Manchuria Railway. Over 160 cars of the South Manchuria Railway were employed to move the grain out of northern Manchuria to Dairen, where an unusual shipping activity is taking place to carry the cargoes to Europe. Sooner or later, the wheat crop of Manchuria will surpass the soya bean, and we may look for interesting developments in the sale of agricultural and other machinery.

Manchurian wheat is destined to play an important part in the feeding of the nations, as development takes place. The Seattle chamber of commerce recently reported that two export mills on the Pacific Coast recently received Chinese and Manchurian wheat, said to be the first shipment of the Manchurian grain received in twenty years. It adds, " the result of this Manchurian importation is being closely watched, for the shipment came in at lower prices than local wheat. The Manchurian wheat came in with a freight rate of $3 and $4 a ton on it and was sold at ten cents a bushel under the asking price on club varieties here. This price includes a duty of ten cents a bushel."

Teak in Siam

LOGGING in Siam is done entirely by elephants. The East Asiatic Co. owns 325 of these animals valued at $1,500 to $2,000 each. There are no roads to speak of in Siam, and elephants are the beasts of burden for all purposes, and they form an indispensable part of all logging operations in that country.

The teak timber is located at a considerable distance from Bangkok, and it requires three to four years from the time the logs are put into the Menam River until they are driven to the mill at Bangkok. In driving the logs, the natives, both men and women, living along the banks, swim out in the stream as the logs are coming down, and examine the brands on the side of the logs. If it is found that the logs belong to the company by whom they are employed, they swim with the log and direct it to the beach, where the logs are assembled and made into rafts. Teak logs are sometimes rafted with bamboo in the earlier stages of the river driving to keep the logs afloat, as the specific gravity of the wood when green is not far from that of water.

Teak is not found growing in pure stands, hence the cost of logging is very high, owing to the scattering nature of the timber. When teak wood is first cut, the heartwood is a dark golden yellow. The wood darkens with age and finally after a number of years becomes almost black. The sapwood of teak is white and usually forms a narrow band between the heartwood and bark. The qualities of teak vary to quite an extent, depending on the conditions under which the material is grown. Teak logs when first cut will not float. The average weight of seasoned wood is generally placed at 45 pounds per cubic foot. The average weight of material dried in an oven until all moisture is removed is about 35 pounds to the cubic foot.

The wood of teak is moderately hard and strong with a rather open, straight grain in which the annual rings are distinctly marked by bands of pores. The wood is strongly and characteristically scented, of oily texture and the surface feels greasy to the touch. The wood has a low acid content and does not corrode iron or steel when placed in contact with it.

The principal use of teak is in shipbuilding, especially for decking and as backing for armor plate. Its durability and lack of corrosive effect on steel make it particularly suitable for this latter purpose. In the United States, in addition to the teak used for ship and boat building, a small quantity goes into house and car finish. About 927,000 board feet have been reported as employed annually by the wood using industries of the United States. In England, while the principal use is in shipbuilding, considerable quantities also go into the construction of railway carriages, greenhouses and high-class carpentry work. The wood is considered too costly for use out of India and the Far East, except for special work.

The teak production of Siam is in the hands of seven concerns operating mills at Bangkok, the timber coming from the same general region at the headwaters of the Menam River. The timber is cut from concessions granted by the Siamese government and the logs are hauled out to the small streams and floated to the main river for driving down to the mills. The more available timber was removed years ago, so the logs are now coming from a considerable distance. Labor is said to be higher in Siam than in any of the other countries of the Far East.

The government of Siam has undertaken to conserve the teak supply by regulating logging so as to prevent wasteful methods, involving unnecessary destruction of the forest. Cutting is allowed only for a limited number of years on the various areas held by the concessionaries and a minimum diameter for logs is fixed by law. The smallest log that may be cut under the regulations is 76½ inches. The royalty paid the government is 12 ticals or $4.44 per log.

Four grades of teak lumber are recognized. No. 1 wood contains practically no defects. No. 2 admits of slight defects such as worm holes and bee holes, slight rot and knots. No. 3 grade increases the number of defects allowed in No. 2 grade. No. 4 grade consists chiefly of culls. Logs will run about 25 per cent. No. 1 ; 30 per cent. No. 2 ; Nos. 3 and 4 combined make up the additional 45 per cent. The East Asiatic Co. handles about 10,000 logs per year, chiefly of the No. 1 grade.

Every teak log that comes to the mill is sawn into a square if that is possible. It is only where a log shows a rotten heart, or is hollow butted for three or four feet, or develops some serious defect upon being slabbed, that it is sawn up into planks or decking. Some plank and some decking, is of course, sawn to order. Higher prices are obtained by the mills for planks and decking than for squares, but the producers prefer that the consumer take the risk of opening up a square and determining its contents.

On the Malacca Coast there is found growing a timber known as *mai yang*. This is a reddish hardwood. The trees will average six feet in diameter, grow very tall and straight and often 100 feet to the first limb. In order to float the timber it has to be girdled two to three years before felling and rolling into the river. By seasoning the wood as it stands on the stump the water content is greatly reduced. Mr. Neilsen states that the *mai yang* is a competitor of some species of Philippine hardwoods. The wood takes an excellent polish.

The East Asiatic Co. has investigated the feasibility of building a railroad into the timber concession and placing the logs in the water at a point where driving would not be so difficult, but up to this time have not deemed it advisable. As the timber becomes more isolated they will perhaps build a railroad. The entire work of logging is done by native labor at low wages which has precluded the necessity of adopting the use of steam and more scientific logging methods.

Japanese General Hospital

Tsinanfu, Shantung, China

ON September 1st, 1915, the Shantung Railway Administration rented a Chinese house on the third street, and after extensive repairs, it was made into a hospital. Owing to the insufficient space in this small hospital, which can be classed only as a sort of dispensary, it was found necessary to turn out many applicants for medical attention, and it became necessary to have a much larger building. Happily the authorities concerned entered upon the plan to erect a perfect, modern, accommodating hospital for Japanese, Chinese and other foreigners where medical attention and sanitary methods are so desperately needed.

The work of erecting the new hospital was started in March, 1917. It is situated on the fifth road, south-west suburb of the Settlement. In the August of 1918, the main building was accomplished.

After the completion of the new hospital, the above-mentioned dispensary was changed into a charity hospital under the administration of the new hospital. A staff of doctors is already at work. Poor patients seek medical treatment at the rate of more than two hundred per day. Patients can get free medical treatment whenever required. At some future date this hospital will be part of the new Japanese General Hospital.

Dr. Toru Makino,
Director of the Hospital

The main building of this hospital covers an area of about 450 *tsubo* (about 16.200 square feet). It has two storeys except the central part which has three storeys.

The ground floor of the main building contains the administrative office, dispensary, chemistry, medical, gynecological, obstetric, pathological, dermatological, ophthalmic and pediatry departments, etc., and through the central corridor one can enter to the mechanical-work house (for the use of repairing medical appliances) and diet laboratory. The cellar contains central heating and power plants.

The right wing contains the surgical department having a large operating room, oto-rhino-laryngological, hydro-therapeutic, physical therapeutic departments, etc.

The first floor contains a dental department, library, council room, dark room and dining hall. There is a broad verandah to the south of this floor from which one can see by looking to the south, the beautiful scenery of the Chien Fu Shan and the neighboring hills and in the east a good portion of the town.

The whole building has been furnished with modern apparatus.

In-Patients' Building

Three similar buildings have been erected parallel to the right wing of the main building, to the west, for in-patients' use, which hold one hundred beds. Each first-class room has one annexed room, with one big bath-house attached. Interviewer's room, nurses' duty rooms, storage places, etc., are also located in these buildings.

In the rear of the hospital compound stands the home for fifty women nurses. Through this building a passage leads to the out- and in-patients' buildings.

Isolation Hospital

This stands to the south-east of the hospital site. The ward block is divided into three parts, and it contains administrative office, dispensary and nurses' duty room.

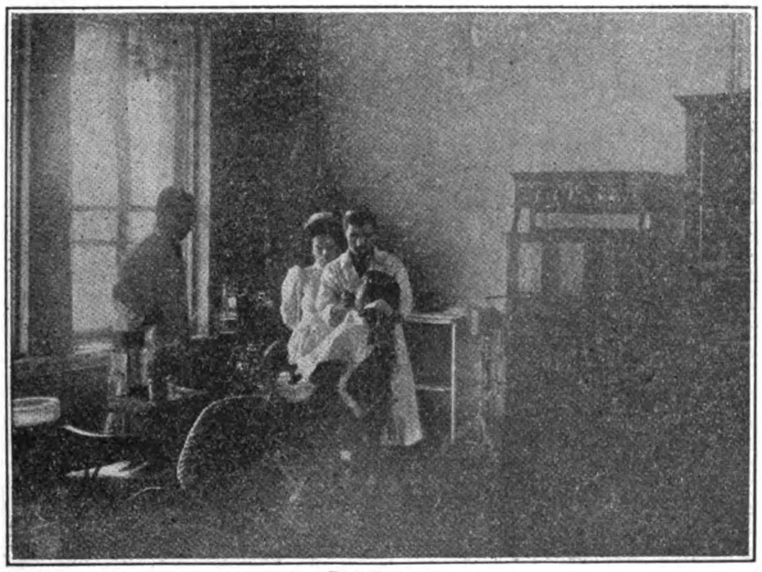
As patients of dysentery and of typhoid can be nursed in a common room, they are received in a ward designed for their reception. As those of small-pox, scarlet fever and diphtheria need to be separated they are received in different wards, separated by glass partitions, so that nurses can obtain a clear view of a patient's condition from the duty room. There is in this building a ward where open-air treatment of pulmonary complaints can be given.

Outer Buildings

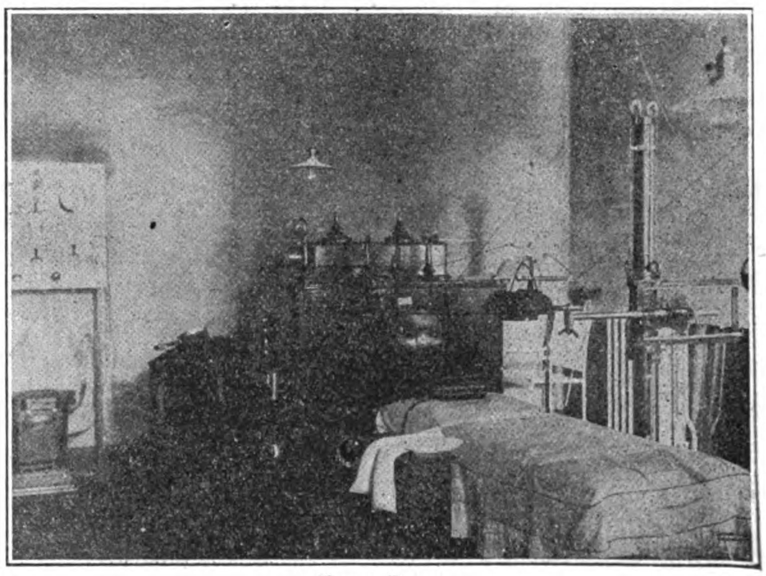
(*a*) One house for mortuary and anatomy stands adjacent to the east of the Isolation hospital.

(*b*) Ice storage.—Modern ice storage stands to the east of the above house.

(*c*) Cow-house.—In this locality, it is difficult to get genuine milk from the medical point of view, so that an up-to-



Dentistry



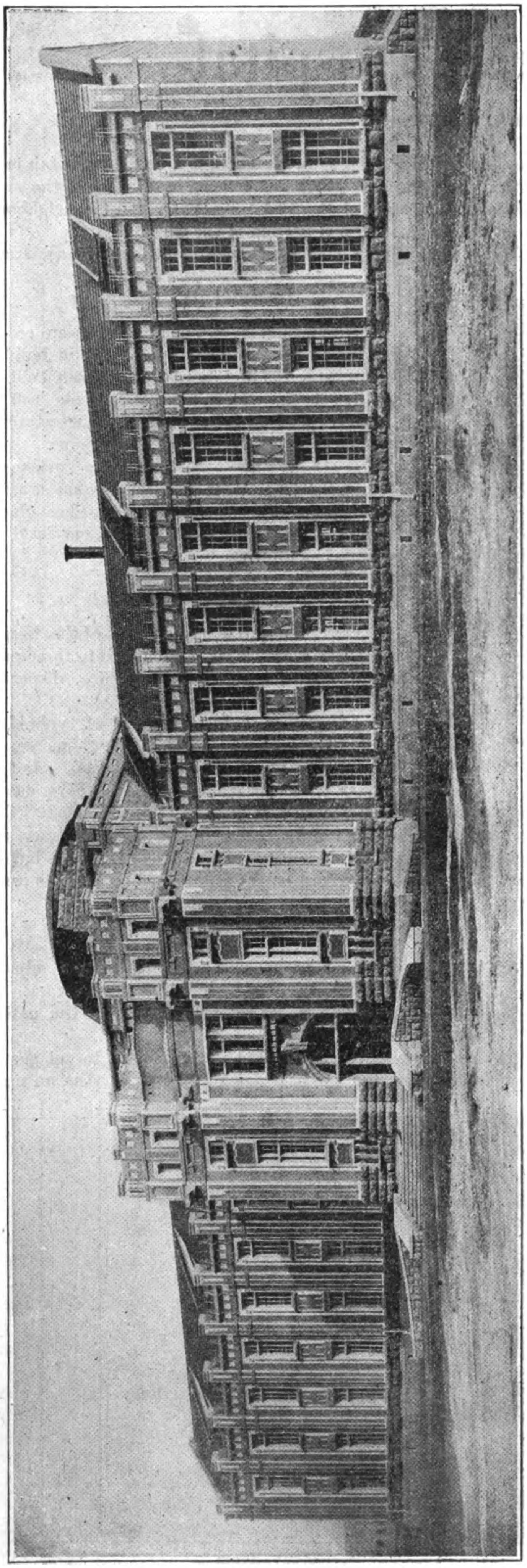
X-ray Room

date cow house has been erected, which accommodates twenty cows.

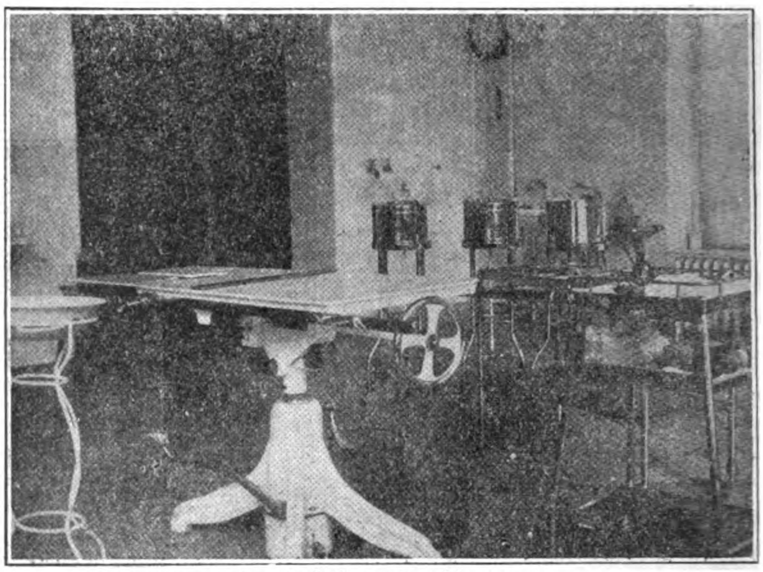
At some future date the left wing, two in-patients' buildings, a new dispensary giving free medical treatment, and various other improvements will be added to those now in use.

Daily visitors to the hospital for treatment number from 300 to 600 persons each day, of which about 70 per cent. are Chinese.

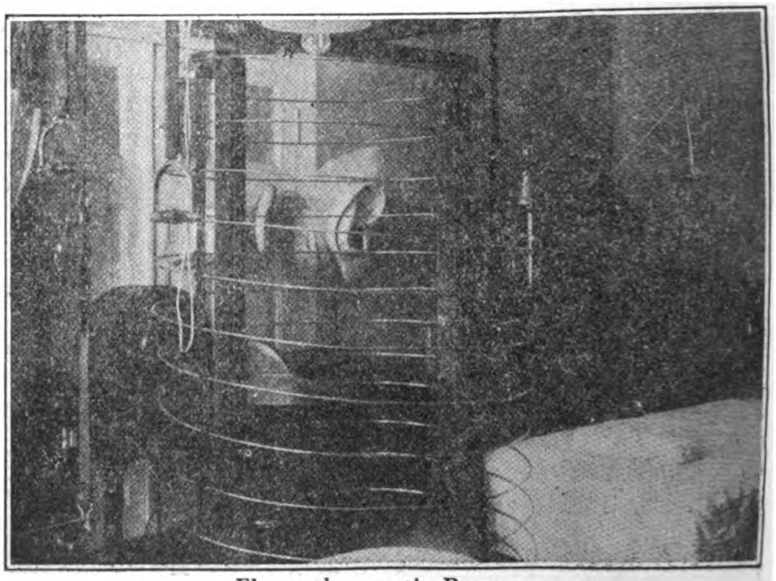
Hospital Superintendent : Toru Makino, M.D. (Univ. of Tokyo).



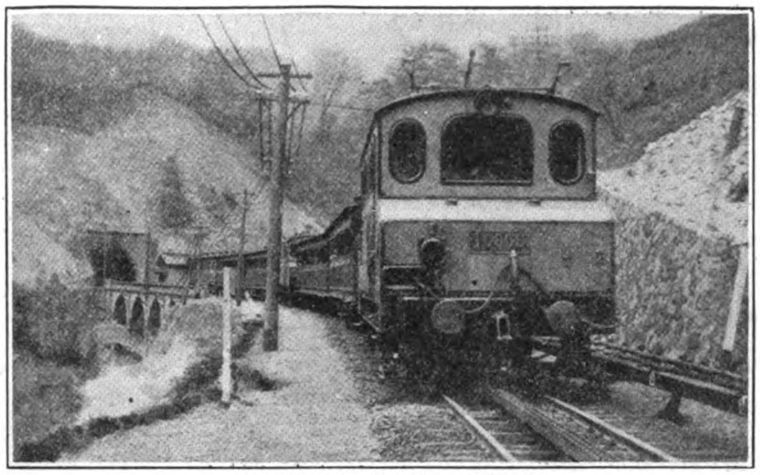
JAPANESE HOSPITAL AT TSINANFU



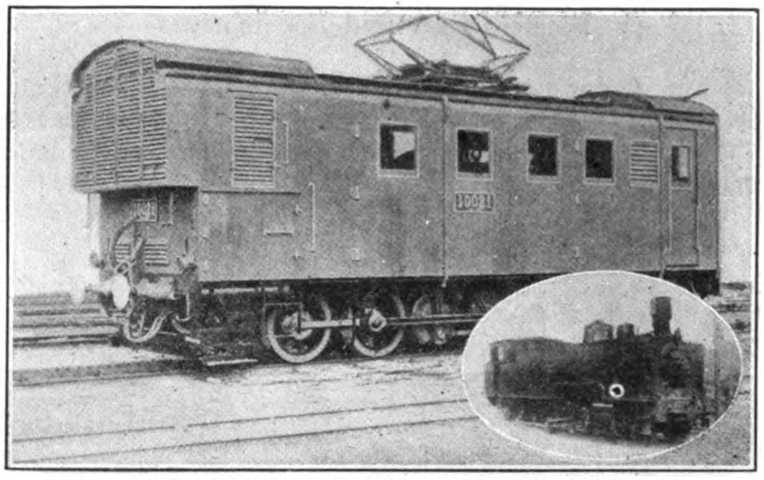
Surgical Operating Room



Electro-therapeutic Room



An Electrically Hauled Train



An Electric Locomotive (inset, its predecessor)

Japanese Imperial Railways

Electric Power Stations and Substations

The following interesting data appears in the last Annual Report of the Japanese Department of Railways

On March 31st, 1918, there were 16 power stations and 24 substations in operation. Compared with the preceding year, the power stations showed no increase in number, while the substations increased four. The distribution of these plants was as under:

POWER STATIONS:

Main Island—Yokogawa, Omiya, Sandaigawa, Yaguchi, Kashiwagi, Hamamatsu, Osaka, Takatori, Okayama, Shimonoseki.

Hokkaido—Kuromatsunai, Muroran, Oiwake, Asahigawa, Ikeda, Shimofurano.

SUBSTATIONS:

Main Island—Maruyama, Yagasaki, Tsuchizaki, Nagano, Ikebukuro, Harajuku, Eirakucho, Oimachi, Kawasaki, Oi Works, Nagoya, Kanazawa, Minatomachi, Kyoto, Kobe, Himeji, Hiroshima.

Kyushn—Kokura, Moji, Tobata, Nagasaki, Wakamatsu, Wakamatsu Works.

Hokkaido—Naebo.

The Shimofurano power station was newly established in April, 1917. In June, the Naebo power station was converted into a substation, while in August and September, three substations were newly provided at Nagasaki, Oi Works and Wakamatsu Works.

Altogether, there were 76 prime motors representing 25,682 h.p., 98 dynamos and converters representing 25,083 k.w., and 204 transformers representing 17,323 k.w. Compared with the preceding year the prime motors decreased 8 representing 1,773 h.p., and the dynamos and converters also decreased 7 representing 1,022 k.w., while the transformers increased 19 representing 763 k.w.

The financial results of the year's operation were as follows:

POWER STATIONS—

Total current supply	33,584,864 k.w.h.
Total operating expenses	Y. 757,411
By-product earnings	Y. 213,915
Net expenses	Y. 543,496
Average net expenses per 1 k.w.h.	Y. 1,618

SUBSTATIONS—

Total current supply	27,968,709 k.w.h.
Total operating expenses	Y. 567,117
By-product earnings	Y. 12,770
Net expenses	Y. 554,347
Average net expenses per 1 k.w.h.	Y. 1,982

Power Transmission Lines

The length of lines for power transmission measured 551.5 miles with a wire length of 1,984 miles. Besides, there were 48.8 miles of trolley lines with a wire length of 156 miles, and 185 miles of rails used for return circuits. Compared with the preceding year, the length of transmission lines increased 78 miles or 16.5 per cent. and the length of wires 190 miles or 10.6 per cent., while the trolley lines increased only 2.4 miles with 7.3 miles of wire length.

Electric Lamp Stock and Motors

The number of glow lights amounted to 83,921 representing 3,309 k.w., and the arc lights 54 representing 37 k.w. Compared with the preceding year, the glow lights increased 8,366 or 11.7 per cent. and the watts represented thereby showed an increase of 22 k.w. or 7 per cent., while the arc lights decreased 11 or 16.92 pre cent. representing 8 k.w. or 17.23 per cent.

The motors in service for current supply totalled 748 representing 10,839 h.p., being an increase of 59 or 8.56 per cent. in number, but a decrease in capacity of 63 h.p. or 0.58 per cent. as compared with the preceding year.

Train Lighting

At the end of March, 1918 there were 20 train electric lighting houses located generally at termini or junctions of the leading lines. The passenger carriages lighted by electricity totalled 3,834, with 33,838 electric lamps, 1,147 generators and 27,701 battery cells. Compared with the preceding year the passenger carriages increased 22 or 0.58 per cent. the lamps 440 or 1.32 per cent., the generators 16 or 1.41 per cent. and the battery cells 380 or 1.39 per cent.

The expenses of train lighting aggregated Y.445,816 working out to Y.150,817 per unit of equipment (2,956 in total as reduced on bogie basis). Compared with the preceding year, the expenses increased Y.96,678 and the average per unit Y.30,825.

Electric Cars and Locomotives

The electric cars in service numbered 152 and the electric locomotives 12, being an increase of 27 cars over the preceding year.

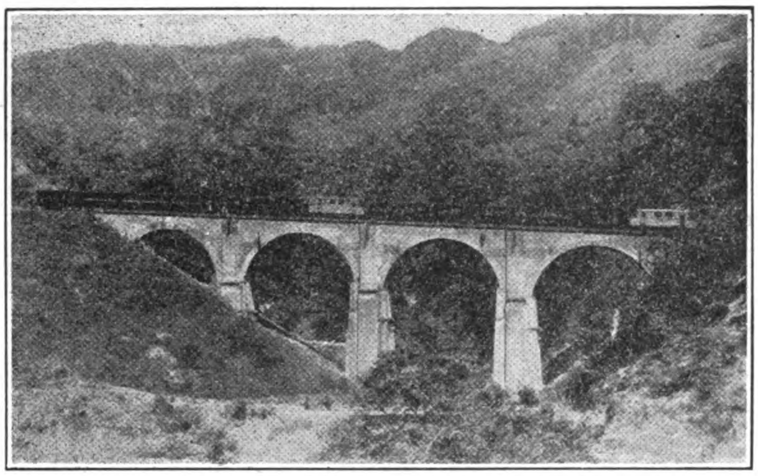
The details of working of electric cars and locomotives during the year are as follows :

ELECTRIC CARS—

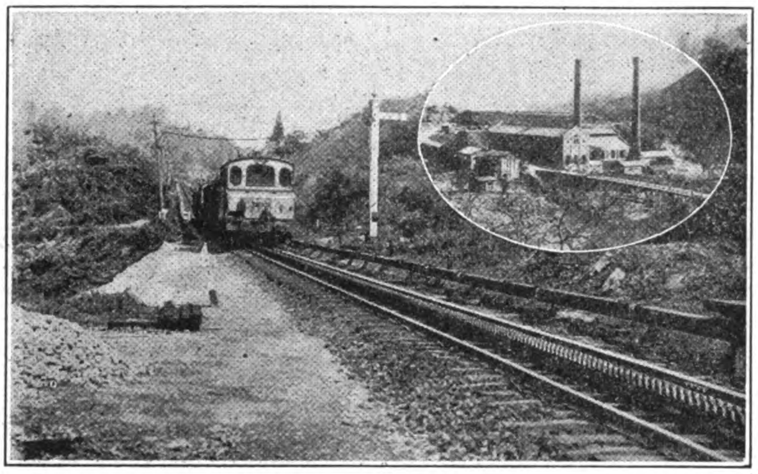
Mileage run	6,968,946.6
Car mileage reduced	6,598,090.5
Current consumed, Volume (k.w.h.)...	15,279,313
Current consumed, Value (yen)	271,994.835
Current consumed per 100 electric car miles, Volume (k.w.h.)	232
Current consumed per 100 electric car miles, Value (yen)	4.122

ELECTRIC LOCOMOTIVES—

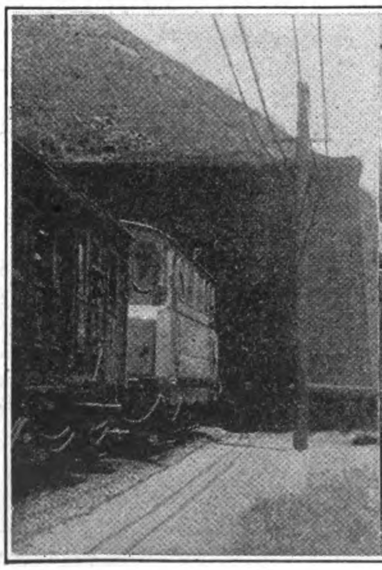
Mileage run	149,166.6
Vehicle mileage hauled	1,008,777
Current consumed, Volume (k.w.h.)...	2,979,693
Current consumed, Value (yen)	120,176.747
Current consumed per 100 locomotive miles, Volume (k.w.h.)	1,998
Current consumed per 100 locomotive miles, Value (yen)	80.565



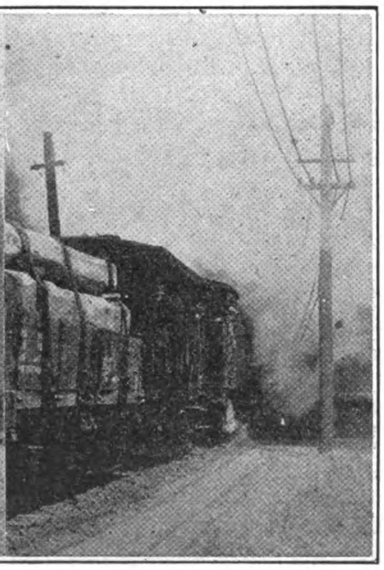
Crossing a Valley



Approaching a Station



At Car Sheds



Hauling Timber

China's Representative at the League

Dr. Wang Chung-hui, Student of World Laws

APPOINTED by the Supreme Council as China's representative on the Committee of 12 which is to meet either in Paris or Geneva for the purpose of revising the Covenant of the League of Nations, Dr. Wang Chung-hui left China recently expecting to arrive at his destination early in May when the conferences will have already begun. Educated abroad Dr. Wang has become imbued with a broadened view point, which coupled with his keen, legal mind, and his ideals for China, make of him an ideal representative.

Dr. WANG CHUNG-HUI, Student of World Laws

Dr. Wang's education abroad commenced in 1901 when he studied a year at the University of California going from thence to Yale from where he graduated in 1905 as a Doctor of Civil Law. He next went to England where he became a barrister-at-law in the Middle Temple His stay in England while fulfilling his bar requirements was not continuous for he spent some of his time in Germany returning to England only at such times when necessity demanded. In all he spent four and a half years in Germany studying part of the time in Berlin University. The country districts in Germany drew him also for the purpose of studying local dialects.

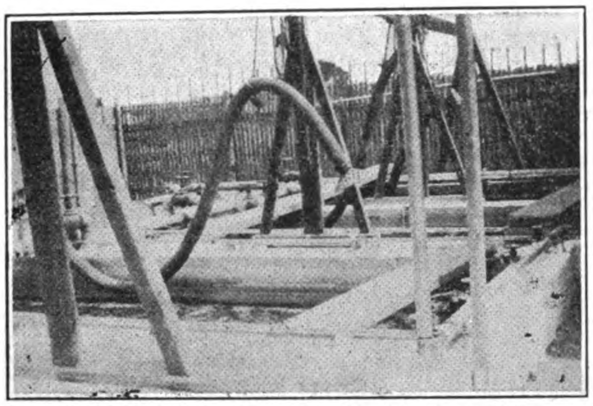
Back from his studies Dr. Wang next gave of his knowledge for the welfare of his country along the lines in which he was best qualified. The codification of China's laws, a basic and necessary measure, became his effort, and is still, for of the five codes, criminal, criminal proceedure, civil, civil proceedure, and commercial, only three are nearing completion. The civil and commercial codes require deeper study of local customs before they can be properly handled.

With the conference over, probably in the latter part of July, Dr. Wang will return to Peking where he will continue with his work in hand after which he will turn to a study of "Continental Law."

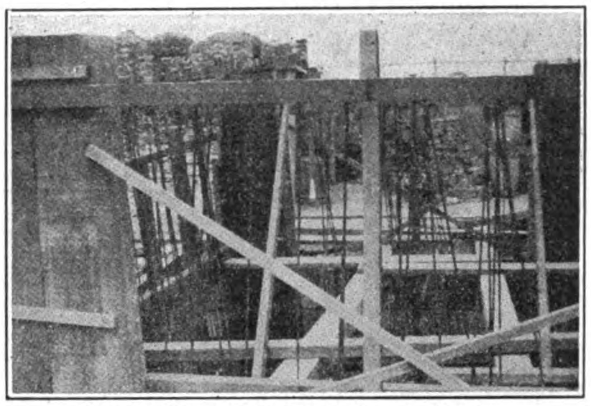
Shanghai Improvements—Sewage Disposal

AT a recent meeting presided over by Mr. A. P. Wood, the Engineering Society of China listened to a paper on "The Present Aspect of Sewage Disposal with Special Reference to Shanghai" which was read by Mr F. C. Helsby.

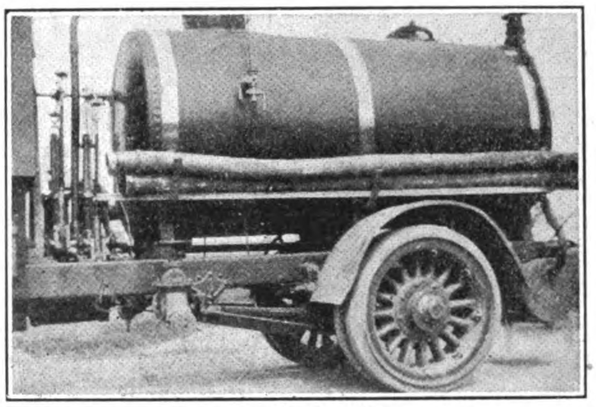
A general historical view was first taken of the steps that have led to the present state of affairs. The first real lever towards the construction of a modern sewerage system would appear to have been provided in the decision given by the Court of Consuls in 1915, whereby it was laid down that a property owner was at liberty to instal waterclosets in a building, but that under the existing conditions obtaining for the disposal of nightsoil, the onus of removal of the discharges therefrom must rest with such owners. The natural sequence to this important ruling has been that in practically all new buildings of any size, waterclosets have been installed, and that in a number of existing buildings advantage has been taken to replace the pail system by that of the modern water-closet. Revised Building Rules, which came into force in 1916, include clauses for regulating the design and construction of the latter and the consequent cesspools, but the popularity of the system has received unfailing proof, as shown by the fact that there are at present about 1,800 waterclosets in various buildings in the International Settlement.



Activated Sludge Process. Tank in Operation

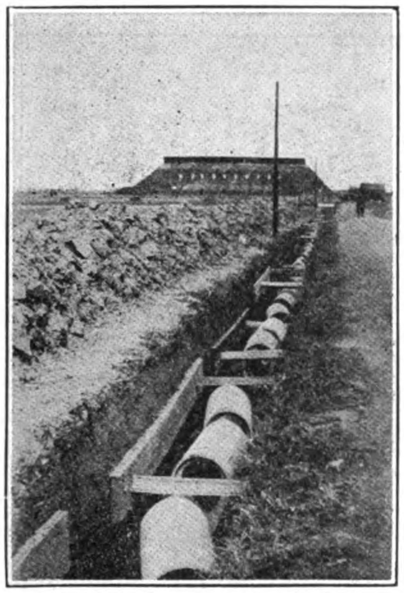


New Tanks at Rifle Butts Sewage Station



Vacumn Tank Wagon

The contents of some of the cesspools are removed by means of hand pumps and other by means of vacuum tank wagons. This method, however, can only be regarded as a temporary expedient as it soon became obvious that a water-borne system of sewers, with modern disposal works, was fast becoming a necessity. In January of this year, the Council approved a scheme for a sewerage system that would deal with the sewage from the portion of the Central District east of Honan Road, the number of buildings in this area actually provided with water-closet installations, or to be so provided in the near future, having increased to such an extent as to render the construction of the proposed system a matter of urgency.



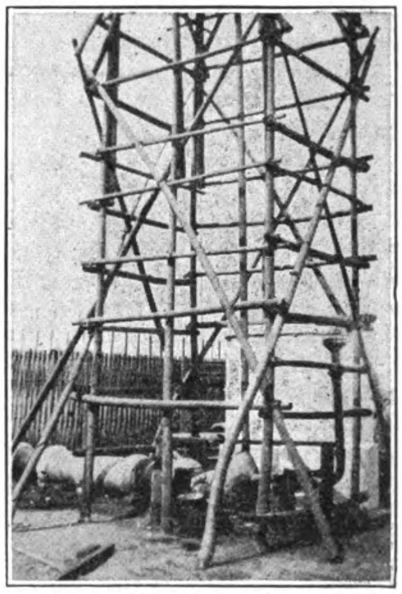
Concrete Sewers being laid at Rifle Butts

In designing a system of sewers for Shanghai, the two main difficulties centre round the facts that no natural fall can be obtained by reason of the contours and that the depth to which sewers can be laid and pump chambers constructed is very much restricted on account of the water-logged nature of the soil. It has been found that in trench excavation, trouble is generally met with at a depth of more than 10 or 12 feet. This has been taken as a guide in preparing the plans, and with a minimum depth to the invert of the sewers of 3-ft. 6-in., the general data necessary for determining the points at which it will be necessary to instal pumps is provided.

The sewers consist for the most part of 9-in. diameter concrete pipes. The main sewer will run via The Bund, Whangpoo Road, Nanzing Road and Dixwell Road to the disposal site. The size of this latter will increase from 12-in. diameter at the Bund to 1-ft. 6-in. by 1-ft. egg-shaped after it leaves the Central District. The pipes will be laid so as to ensure a self-cleansing velocity to the sewage, this latter travelling by gravity from pump to pump en route, with the exception of the lengths crossing the Soochow Creek, the Hongkew Creek, and the Sawginkiang. Pumping mains are being provided over these crossings, one length of 1,250-ft. and one of 3,115-ft. being necessary to overcome these obstacles.

It is proposed to use concrete pipes in the whole system and experiments are now taking place as to the best form of joint to adopt.

Pumping stations will be provided at six localities en route, but, as it is proposed to construct these underground, no public inconvenience will result therefrom. It has been decided to use the stereophagus type of centrifugal pump, the special feature of



Drop Test on Sewer at Yangdow Road Experimental Station

which is that it does not become choked by the passage of ordinary solids. The impeller, which is conical, has a number of spiral blades, which, working against a straight cutting blade, provides an action which has been likened to that of a mowing machine. The pumps will be automatic in their action and will be electrically driven, the main supply of current being delivered by means of underground feeders from various substations, and an alternative supply to be available from the distribution mains to operate in case of failure by the former.

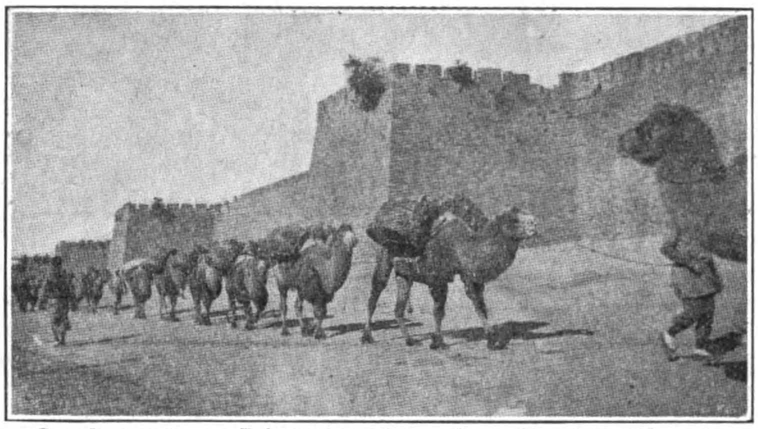
Three methods of treatment were next described.

The demerits of the sedimentation tank were dealt with, reference being made to septic tanks and to two special forms of tanks invented by Dr. Travis and Dr. Imhoff.

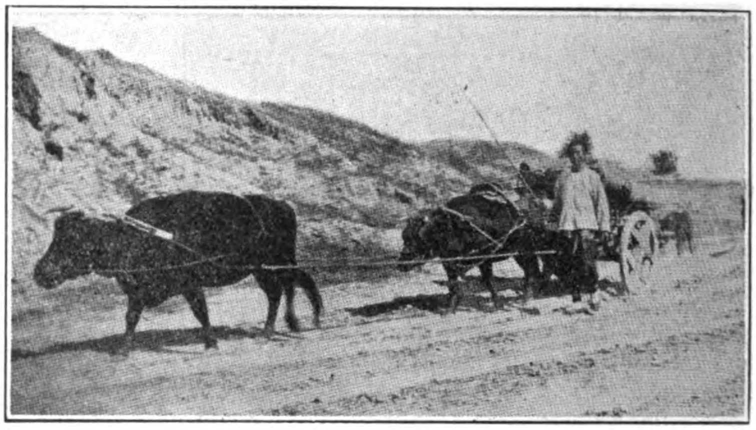
Following on this, the contact bed treatment was discussed, and whilst being recognized as a distinct improvement on the first named system, its effectiveness was stated to be below that of the activated sludge process, that was next described.

In this latter process there are two different methods of obtaining the desired oxidation, one by blowing air through the tanks containing the sewage, and the other by means of mechanical agitation through the medium of paddle wheels, and these were described in some detail.

A visit to the Council's experimental station and sites where the new processes are actually being installed makes clear the fact that the community will greatly benefit when the system has been installed. The work adds to the large list of municipal improvements, and will become another of the many public facilities of Shanghai which justly gives the city the title of "The Model Settlement." The international character of Shanghai renders it possible to make use of improvements originating from all over the world. If it were otherwise, the city might lag in civic welfare.



Camels arriving at Peking from Mongolia. The Automobile is replacing the Camel



A Cart in Northern Chihli

Breaking Down Road Barriers in China

MODERN road building in the Chinese Republic is made difficult, not so much by the general typography of the country, but by the difficulty of breaking down artificial barriers which have in the past made road extension impossible.

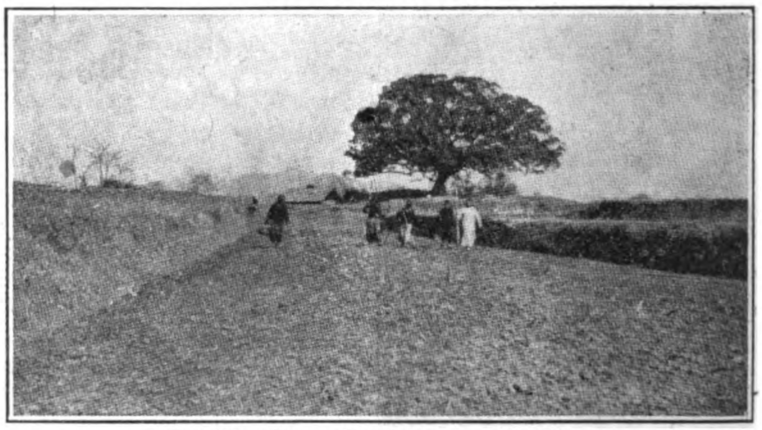
But the New China has now opened her doors to world trade and internal development is responding to this newly-developed international commerce.

That China once led the world in public works is evidenced by the great system of walls and canals, the building of which would be considered a wonderful engineering feat to-day, comparable with the Panama Canal or the Central Railway of Peru. Now China has begun to tear down her walls and to use the brick and stone for road building. The rocks from the walls of the city of Tientsin, which were torn down nine years ago during the revolution which overthrew the Manchu dynasty, are to-day being used for building macadam highways. Many other Chinese cities are using their walls as quarries for road materials.

There is more than one reason for this, however. Not only are the walls no longer needed, but rock does not exist near the surface of the ground over large areas of the country. For hundreds of miles one encounters nothing but flat alluvial plains where nature has placed no rocks or even pebbles for road construction.

There is another barrier to road building which has not as yet been entirely overcome, and probably will remain for a good many generations. This barrier is the burying ground. There is a very strong feeling among the people that nothing should be done to disturb the cemetery.

As Chinese graves are said to occupy one-twentieth of the whole area of China, and as there is no set place for cemeteries, it is very difficult to build a road in a straight line in any direction without encountering one of these barriers. There is no possibility of mistaking the burying grounds as dirt is heaped to a height of from five to fifteen feet above each grave.



Breaking Down Road Barriers in China

However, in spite of these barriers, road building is going ahead as fast as can be expected and the Republic has not only improved many lines of communication, but is planning big road projects for the future.—*Highway Magazine.*

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, APRIL, 1921.

Lest we Forget!

"It wants more courage to make peace than to carry on a war. *People who demand war and criticize peace are generally weak people who have never fought.*"

ELIHU ROOT, the foremost American statesman of our time.

Estrangement Impossible

PRESIDENT Harding has emphasized that the American government has returned to its traditional policy of maintaining friendship with Japan, the greatest asset the nation holds in the Pacific. From all sides comes indications that the war-makers have had their day, and from now on, peaceful co-operation will supersede international rivalry. When Ambassador Shidehara was received recently by President Harding and the latter expressed his thanks for the message of congratulation from the Emperor of Japan, he added:

"The wonderful progress attained by Japan is one of the most remarkable events in history, and the indefatigable efforts by which she has attained her position in the world elicits admiration.

"The relations between Japan and the United States have never been estranged in the real sense of the term, nor is any such estrangement possible.

"The promotion of friendly relations between the two nations will constantly be my object, and the new Administration is glad to declare its sincere intentions in this respect. This is not mere compliment but an honest confession of my real desire, and I hope my words will be taken at their face value."

Sounds like Roosevelt. With a host of American financiers testifying to the whole-hearted friendship of Japanese businessmen and their desire to co-operate with us in the strengthening of China, the above message comes as a harbinger of a new era in the Pacific.

Massey for Alliance

Signs are not wanting that the change of administration at Washington is having its effect in other quarters of the Pacific. In a speech before the New Zealand House of Representatives on March 22, Premier Massey, declared:

"As long as we insist on and obtain the right to choose our own fellow citizens, we have much to gain and nothing to lose by the renewal of the Anglo-Japanese treaty. Japan was thoroughly loyal to us during the war, into which she was not compelled to come."

It remains for Premier Hughes to ignore the propaganda being circulated "down under," in order that the Pacific nations may arrive at some amicable understanding that will do away forever with the possibility of strife.

A Rival to the Model Settlement

NEW China is continually concocting plans for civic improvement, extravagant plans in the main, but to aim low is to miss compiling a good score, and it is pleasing to observe a lofty elevation.

The latest plans are concerned with the development of the port Sanmenwan which is situated on the coast between Ningpo and Wenchow. A contemporary reports that $50,000,000 have been subscribed for various aims which it is the purpose of this article to expose, and if this is true, and the money is expended as planned, then indeed will the "Model Settlement" of Shanghai find herself seriously rivaled.

It is stated that the authorities plan to establish banks to encourage thrift and to furnish capital for enterprises giving banking facilities for the community. This is not quite clear but the idea is no doubt praiseworthy.

The next plan is to open and develope mines so as to exploit the mineral resources to the fullest extent. If mines are opened and developed for any other purpose . . . but then the native mind is perhaps divergent and can visualize other uses which the announcement endeavors to explain.

There follows the plan to grant homesteads to encourage farming. This, it is stated, will make the importation of food unnecessary. The sublime state of self-dependency!

The fishing industry will be the next to receive attention. It will be improved and developed in order to utilize the natural resources to the full extent.

Good modern roads will be built in order to give the community adequate transportation facilities.

Waterworks will be instituted so that the community may have plenty of clean water, and consequently the health of the inhabitants will not be endangered. Where drinking is concerned the state of water is not a serious one with the Chinese for it is generally boiled and poured on tea-leaves before consumption, but it is perhaps in other ways such as draining off sewers and bathing that the waterworks will be beneficial.

Gas works will be established so that the city may have its streets and homes well and cheaply illuminated. No mention is made of electricity stations so it may be presumed that the promoters of this mecca of China are in one respect adamant regarding the inception of modern innovations.

Wharves will be built to facilitate the landing of passengers and freights. The word "facilitate" appears so frequently as to create the impression that there is too great a display of altruism in the scheme. Shakespeare analyses the symptom thus, "Methinks thou protesteth too much, good sir," if memory interprets correctly.

Docks will be built so that repairs may be quickly made. It is senseless to quarrel with docks. Some work rapidly and others are imbued with somnolence. Repairs are impossible, however, unless there are docks.

Streets will be planned in a manner to give convenience to the inhabitants as well as to give the city a beautiful appearance. A highly commendable proceedure.

Railroads will be built to connect the new city on the north with Ningpo, and on the south with Fukien province. A railway bearing in a westerly direction will be a necessary adjunct if the city is to warrant its establishment, commercially.

Attempts will be made to have the city connected with Hongkong and Shanghai by steamers. It is stated that sailing ships will be encouraged in order to supplant steamers in carrying cargo. Provided the trade of the port is such as not to demand urgency of despatch and receipt, lorchas and junks could be profitably used as carriers and the ancient method is far more picturesque and cleanly. Were the city not planned to be so modern this idea might demand hearty endorsement but it is not in keeping with Westernism.

Barracks will be built to give comfortable quarters to the police. Much of the terror of rowdyism is lost when the guardians

of the peace are contentedly habitated. Just so much violence will be exhibited as will prove the necessity of maintaining a police force. Human nature takes fright at little so that unless the lawless predominate there need be but minor disorders.

Parks will be laid out in the different quarters of the city so that people will have chances to enjoy the outdoor atmosphere. Indoor atmosphere in China is, as a rule, sufficiently obnoxious or malodorous to encourage an opposite indulgence and it is satisfactory to observe that the builders of this modern Utopia are alive to the benefits of out of doors.

The city will be ruled by the representatives chosen by the people. A beautiful town hall will be built to house the law-makers. Unknown, as yet, is the state of squaler amongst law-makers, but, like policemen, contentment eliminates temptation to a large degree, and honest councillors must be maintained at all costs if the city walls are not to crumble before they take definite shape.

A Confucian temple will be built. The city will serve as a model city in China. The residents will worship Confucius and they shall deal with each other in the spirit of Confucian precepts. So says the agenda which concludes with "All other enterprises are subjected to the regulations of the city."

Few people can sustain any great quarrel with the intentions of Sanmenwan's renovaters even to the inculcation of Confucianism, for in them can be seen a desire to incorporate all that is good of the city of Shanghai into their little burg on the coast. A scheme of this description deserves every encouragement and will no doubt receive it provided there is no kith nor kin between it and the "South Sea Bubble." Shanghai did not grow up in a day, neither has any city, excepting those which had their origin as a result of new armies, dock yards and terminals; and while not wishing to discourage whatever work may be in hand, and it is hoped that matters have reached a stage where something tangible is already evident, the counsel of small beginnings must be brought to the attention of the promoters for in this way only is success positively guaranteed. With the government behind such a scheme the counsel of small beginnings becomes a negligible asset, and success becomes a foregone conclusion. There is a savour to the scheme, however, which attaches to all promoters, but even this need not retard if a certain degree of confidence can be instilled into the public. Confidence can only be felt by a second party where sincerity of purpose on the part of the first party is plainly evident, and for the sake of real progress in China it is recommended that the government concern itself with the project and show conclusively that real betterment of conditions actuates the movement. It cannot be expected that either the government or the promoters are not to benefit in a pecuniary way. It would be foolish to remove the spur to ambition, only, let the "backsheesh" be reasonable.

* * *

A Tribute to Dr. Sun Yat-sen

The Danger of China

OUR own resounding conflicts and controversies do not allow more than the muffled echo of tumults farther afield to penetrate, but it is to be hoped that we shall not wait for some explosion before paying heed to the ferment that is rising anew in China. That unfortunate country has been rent for many months past by warring military factions. The most intemperate of these have, fortunately, now been subdued. But there persists in the southern provinces a rebellious movement of quite different calibre, led by Dr. Sun Yat-sen, the first president of the Chinese Republic. Dr. Sun Yat-sen is a man of uncommon ability, inspiring personality, and, it would seem, progressive outlook. For he and his party, known as the constitutional party, demand above all things the convening in Peking of a freely-elected parliament that shall be permtted to lay down the laws of the land without interference by the military. That program has secured to Dr. Sun Yat-sen the impassioned support of all the more progressive spirits in China. His followers were recently successful in expelling from Canton a self-imposed military government. Though this government declined to recognize the decrees of Peking, a special allowance was made to it from the customs revenues, which are under the control of the great powers. But, for reasons that are difficult to grasp, the powers now refuse to grant to the rebellious constitutional government of Dr. Sun Yat-sen the boon they had bestowed upon the rebellious military government, now overthrown. To this decision Dr. Sun Yat-sen has replied by intimating that he will himself collect the Customs in the provinces under his control, retain what he thinks his due, and then hand over the balance to Peking. The powers are in consequence faced with a situation which they must either tolerate or meet by force. Force ought to be out of the question against a government which, on the whole, represents the progressive forces of China, and which has succeeded in getting itself accepted over large areas. We must be careful not to repeat in China the blunders we have made in Persia.—*Manchester Guardian.*

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Yunnan Mining Affairs

A Tin Trade Quandary

A GREAT problem which confronted those interested in the Yunnan tin trade some time ago was the likelihood of being unable to dispose of accumulated stocks. Matters reached a pass where grave alarm was felt but fortunately a demand from Hongkong eventuated which relieved the situation somewhat. Hongkong in turn found herself overstocked shortly afterwards but this is another story.

The Straits Trading Company, anxious to deal direct for the requirements of the Singapore Refining Works, have repeated a previous effort to do so. Some 180 contracts for 10,000 tons of ore were signed with many mine-owners willing to sell and do away with the out-of-date compulsion method, and the company then sent to Yunnan a staff and what was necessary for the assaying and the packing of the ore and its despatch to Singapore. But when the time came to put into execution the signed contracts, a campaign of a very violent nature was started in the daily papers of the provincial capital, and obstructions were put forward preventing the company from taking delivery of the ore. The matter was taken up officially with the provincial authorities, who, before the general popular outcry and the resistance of the chambers of commerce, moved by some mine-owners and the most important smelting companies, had sided with the latter. They, therefore, refused to use their power to influence or break the resistance. It is generally thought by the Chinese that the sale of ore to a foreign company, though in small quantities, will eventually lead to a complete hold over the mines by foreigners and mean the ruin of all the native tin industries, smelting factories, and, in a word, the end of the flourishing town of Kokiu, with its rich shops, theatres, restaurants, etc. The Straits Trading Company issued tracts to the effect that their needs were very limited, that they had no intention of competing with other native concerns, and that should it not prove to the advantage of the miners these were at liberty not to renew their contracts. They explained clearly to the Chinese all the advantages to be derived from the direct sale of the tin ore at a very good price, especially that the tin produced and refined at Kokiu was of an inferior quality which could not expect to attain such good prices as the pure quality. This has had no effect, and until the end of the year no progress whatever was made by the company towards getting its contracts executed. It still hopes, nevertheless, and all the more now that there are indications that the opposition will give in. This eventuality would allow the mine-owners to reap for themselves what none in Kokiu are gaining at present on account of the absence of buyers, a state

of affairs which has lasted for one year. Some of the tin in stock at Hongkong was disposed of in the very last days of December to British buyers, but the main supply remains unsold. The mines have naturally been producing less, and the number of miners, which had reached 110,000 during and since the great war, is now reduced to 30,000 and will be still more reduced if this state of affairs is not changed. It means a considerable loss of money to all and ruin to many. This Kokiu tin, the price of which reached some $130 per picul the previous year with contracts to $150 and more, saw its value fall soon after the Armistice to $90, and during 1919 to $70, $60, and even to $58. It has risen again and is now valued at about $80. It is difficult to estimate the real cause of this impossibility of disposing of the tin, and numerous reasons are given containing some truth. The main cause is that America, who was one of Kokiu's greatest buyers, has succeeded in getting hold of the Bolivian tin mines formerly in the hands of the Germans. These mines are being worked in the most up-to-date manner, and America is getting all she can out of them, whilst the refining is done in a very scientific way, giving the tin a higher degree of purity, which cannot be reached by the less scientific processes in use at the smelting factories of Kokiu. The tin produced at this latter place is said to contain principally arsenical salts and lead, the elimination of which is difficult after having reached a certain degree. The highest degree of purity that can be obtained is said to be 99.85, whilst the best ever obtained by the Yunnan smelters is 99.50. The difference is of the greatest importance, as a bar of tin of 99.85 quality would bend and not break, whilst the result is quite different at 99.50. Japan, another of Yunnan's customers, is said to have accumulated during the war quite enough tin for her own consumption and for some time to come, so her wants at present need not be considered. This is how matters stood some time ago and for Yunnan's sake it is hoped that she will either find buyers for what she can produce of refined tin before bankruptcy sets in all round the tin industries, or that she will come to some understanding with the Straits Trading Company and dispose yearly of a certain quantity of ore for export.

* * *

A Proposed Boon

SOON the pleasure haunts round about Shanghai may be within the reach of others than house-boat travelers. Motor car owners and hirers may pick up their equipment at a moment's notice, which is more than house-boat hobbyists may do, and saunter along a high road which, it is proposed, will wind its way round Tahu Lake and back to Shanghai, an approximate distance of 260 miles. If the new plans adopted by the executive committee of the good roads committee of the Pan-Pacific Association mature, then this pleasant possibility will be a matter of fact. Good roads mean good everything. It cannot be expected that the marked poise in the temper of our friend the Chinese peasant can be improved upon, but even he, will, no doubt, betray a certain lustre of eye as he swings along the proposed new highway when he finds his feet do not gather about them adhesive substance to retard his progress. The wonderful patience of the Chinese trader in itself merits a reward which will be his when he can move his cotton, his general produce, on the motor lorry instead of by yulohed boat and wheel-barrow. Whether he will appreciate the change, the new order of things, is a question upon which conjectures are hazardous, but when Chinese like Dr. C. T. Wang suggest that plans for a big meeting be made, a meeting where representative men from all over the country may discuss road making, as he did at the coming together of the executive committee above referred to, then a belief may be ventured that the trader will not look askance at it.

Proceedings have developed to this extent. Mr. Sidney Powell, who was recently asked to act as chairman of the survey committee, has accepted office and has started work. He has submitted a plan for a road to run from Shanghai to Wusih, thence to Ishing, Hangchow and Kashing and back to Shanghai, thus going round and very nearly touching the Tahu Lake and passing near Mokanshan. The road, it has been pointed out, would be more easily built on account of its proximity to the hills which are a source of material for road making. It would bring Hangchow within five hours of Shanghai by motor car while the trip round the lake could easily be made in two days. Mr. Powell has returned recently from Nantungchow where he has been acting as consulting engineer for improvements, and, in particular, for several roads which have been built extending out of that city. An invitation has been extended to the good roads committee to visit Wusih where some new roads have recently been built, and it is not improbable that advantage has already been taken of this kindness.

The only objection to the scheme lies in the prospect of destroying the beauty of the hills en route which blasting operations for road material makes very probable. It would seem that no regard is countenanced of the nature lover's feelings, the enterprise being merely a commercial one to facilitate movement of materials between villages and cities. There is a long standing grievance against industrialism for its ruthless attitude towards nature. If some compromise could be effected, some arrangement whereby roadways, railways, bridges and dams could be built to harmonise as far as possible with the atmosphere of their immediate vicinity, so much less would then be the disfavor which each faction now gazes upon the other. Materials for developement must be garnered locally, but this is no reason why indiscriminate destruction of landscape is indulged in.

* * *

Mining Enterprise

Probabilities

EXCEPT in the few great mining enterprises which already exist in China, concerns firmly established and in full working order, there is no other evidence of the work of the many geologists that have traversed this country. Results are not commensurate with the labor expended. Were conditions less atavistically obstructive there is reason to believe that smoke from smelters would cloud China's atmosphere to a deep, grey-black hue. Perhaps this is fortunate, but there are those who will hold that it is not. It is the opinion of Dr. Coggin Brown that in Yunnan, while there are no more surface deposits to be discovered, it is highly probable that complex ores exist at greater depth, and that large bodies of low grade ore may be found. An article from the pen of this gentleman on "The Mines and Minerals of Yunnan" will be found in this number and attention is invited to the store of information contained therein. The "Mining Magazine" is its sponsor.

The majority of sojourners in these parts seem wrongly under the impression that China is a virgin mineral region as was North America when Columbus first touched its shore. We know that the Chinese worked metals even before such a thing as history existed, and that the simple ores and out-puttings are well nigh exhausted. Output is lower now than it was formally and no lack of demand is the cause. It is a fact that the antiquated mining contrivances that are used in the country will soon be unable to fit in with developing needs, that is, in the way of depth work, and if the ancient and time-honored habit is to be continued, the habit of curbing the foreigners mining activities in this country by conflicting each nation's interests, thus ensuring a deadlock, then mining in these parts will continue in its present lethargic course to be eventually eliminated.

An illustration of Chinese antipathy towards modern inception of mining is shown in the experiences of Mr. Robert M. Raymond, who, with a party, and under the auspices of an Anglo-French syndicate formed for the purpose of seeking mining con-

cessions, travelled, in the year 1898, into Yunnan where he was to meet disappointment in the supposed opportunities presented for working old copper mines, and with the complicated methods of Chinese official control. Consistent disappointments, arising chiefly from the unfriendliness of the government's various branches, and of the people themselves, formed the subsequent history of the corporation for whom he traveled.

Arguments in favor of China's attitude towards mining can easily be advanced, and in fairness to her people it might well be mentioned that the existing state is well suited to their needs, nevertheless, it is recognized that great benefit is to be derived from modern exploitation of mineral resources. It is gratifying to know that more and more facilities are being given to foreigners for the examination and exploitation of China's mineral deposits. In time, perhaps, the dream of those interested in China's mining, the dream of a clouded sky from a myriad of smoke-stacks, may be realized. If depth deposits actually exist then it probably will.

* * *

A Squanderer of Yunnan Mines

CONCESSION hunters would find their work greatly facilitated were the men they dealt with of the calibre of one Woo, who, it is said, recently offered "all the mines of Yunnan" as security for a large loan from an American organization. As representative for some Yunnan authorities Woo approached an American in Shanghai shortly after his arrival, and following upon some conferences signed a secret agreement in exchange for which a large sum of money was said to have been paid as a deposit. Unfortunately for Woo and the others of his clique who might have benefited through the deal, his chief, General Tang-chi-yao, was ousted from power soon after the matter was settled. The opposition now commenced work.

It is perhaps a saving grace that in all human enterprise the element of gain to someone plays so prominent a part. If it were not so, and is not so in many cases, there would be more forcing upon a gullible public of things which it did not really want. The Yunnanese residents of Shanghai who set up the opposition as soon as they heard of Woo's little mission, cannot be said to have stood to gain immediate wealth by so doing, but certain it is that their desire not to lose an asset which they might later become party in profitably disposing of, played a great part in prompting the mass meeting which was held, and the telegrams which were sent to Peking requesting that the Diplomatic Corps be approached with a view to cancelling the loan. Woo was approached by the indignant Shanghai gentry from Yunnan as also was the American concerned. Their representations might have counted for nought had not then come the news of General Tang's downfall.

With the demand for the cancellation of the agreement and the return of the bargain money made by the American representative, Woo could do nothing else but comply.

Woo's idea, it appears, was to call the new organization the Minhsin Mining Company. The capital of the Company, five million gold dollars, was to be used in the exploitation and developement of the copper and other Yunnan mines, with American co-operation. Unless the new power, General Ku Pin-tsen, supports the scheme as promoted by his predecessor General Tang, the work done by Woo will not bear fruit.

* * *

Hepburn States Facts

AT a dinner given in his honor by the governor of the Bank of Japan at the Bankers' Club at Tokio, Mr. A. Barton Hepburn, former chairman of the board of the Chase National Bank of New York, expressed himself very forcibly on matters which have merited the disapprobation of many Americans in China. Since American financiers and captains of industry have placed themselves on record that American business in China can be advanced by some harmonious understanding and co-operation with Japan, the full weight of American interests in China, supported by friends in the United States has been exerted to bring pressure to bear to compel them to change or modify their views. The evidence accumulated by THE FAR EASTERN REVIEW is emphatic on this point. Into the camp of the opposition, now comes Mr. Hepburn one of America's most distinguished bankers and emphasizes upon the ground what Judge Gary, Mr. Lamont, Mr. Vanderlip, and other sober-minded far-seeing men have been preaching in the United States. THE FAR EASTERN REVIEW welcomes Mr. Hepburn to the Far East, where he will be able to see with his own eyes and study with his own mind conditions which exist as the outcome of years of misunderstanding and manhandling of delicate questions.

Mr. Hepburn in his address before the Bankers' Club in Tokyo spoke of the joint sacrifices of Japan and America in the Great War, of their co-operation in the "same great principles of humanity, the same rule of right and justice.

"I can conceive of our nations working together in close co-operation and using their power jointly in the interest of world peace, for the solution of particular difficulties in other and contiguous nations, but that they should war with each other is inconceivable."

"The damnable character of war," he continued, "its waste, its devastation, its broken hearts and broken homes has had a horrible illustration in the war in which we have just participated. And what has this world war settled ? That a nation that deliberately sets out by force to dominate the world invites its own ruin.

"Two years ago November 11, the armistice was signed, but war did not cease among various states and the newly defined countries which the allies sought to establish. We have, thus far, had confusion worse confounded and the end is not yet.

"*There is no sentiment in favor of war with Japan in our country.* Theodore Roosevelt wrote "is there any sane man who does not know that the friendship of Japan is the best international asset we can have ?" Such is the sentiment of my country toward yours.

"We expect the closest competition from Japan and we welcome it. We are bound to be the closest rivals in world trade and are bound to have the friction that inevitably accompanies commercial rivalry, but rivalry involves co-operation. The sensible way for America to do business in the Orient is by utilizing Japan's superior knowledge of conditions and by close co-operation. We realize that the Orient presents a more promising field for investment but the necessities of devastated Europe have commandeered our resources.

"The reports of the two great banks of Japan which appeared recently present conditions of which you as a nation must be proud. With their branches and agencies they show the wonderful extent to which Japan enters into the business of the world. Your gold holdings make Tokyo one of the most important financial centres. New York alone can compare with it.

"Your banking system is ideal, none superior, amply proved by the way in which you have met and mastered difficulties in the past year.

"Because of the financial strength of our respective countries we have a great responsibility to the world, a responsibility to maintain the gold standard and preserve the high standard of credit until that part of the world now floundering in a depreciated currency and impaired credit can come back to normal. The world pays Japan and America the compliment of expecting them to pay their debts in full and in gold or its equivalent. All talk of repudiation or forgiveness of debts leaves their skirts untouched.

"Japan, like America, has, since the beginning of the war, become a creditor nation and must assume its responsibility as such. Nations must look beyond their borders, their vision must include the whole world and their actions must consider the interests

of others, in the general interest and in enlightened self-interest as well. The league of nations may be cumbersome and slow to act but the leading nations must and can co-operate. In my judgment a good combination would be Italy, France, Great Britain, the United States and Japan. Whatever these countries might propose would doubtless be acceptable to the whole world. But Japan, with its Y.1,246,688,840 in gold, with comparatively light indebtedness and credit unsurpassed, is singled out from other nations and the world looks to you and to America to preserve the gold standard, to protect and restore the credit fabric of the world. Your representatives asked the Paris Conference for a declaration recognizing race equality. You have demonstrated that you are the peer of any nations in art and science, manufacture and trade, in war and diplomacy and what the world now expects of you is a much stronger recognition of your equality than could be expressed in a formal declaration."

America needs a few more men like Mr. Hepburn with the courage of their convictions to speak out plainly at this juncture, when the arts and intrigues of the war-makers are unceasingly at work to cause trouble.

* * *

Shibusawa Squashes a War Maker

AT the meeting referred to in the above editorial, Viscount Shibusawa, the veteran philanthrophist and financier of Japan, availed himself of the occasion to squash one of the malapropisms circulated by Mr. Hodges, active head of the Chinese publicity office in America operating under the name of The Far Eastern Bureau. This bureau has done excellent work in bringing before the American people China's side of the many issues that crop up from time to time, but it labors under the disadvantage that it lacks efficient supervision by someone fully acquainted with Far Eastern facts. In his speech, Viscount Shibusawa referred to an article by Mr. Hodges in the *Weekly Review*, an American publication, which was an attack on what the writer called "Shibusawaism." This the writer described as a clever scheme, in which Viscount Shibusawa was the chief actor, to keep prominent Americans from visiting China and to make them see the Chinese situation through Japanese eyes.

"Not only do I make no effort to keep Mr. Hepburn from visiting China, which he will do shortly," said Viscount Shibusawa, "but I heartily wish him God-speed on his voyage to that country. It has long been my contention that the wealth and resources of China are too vast for cultivation by Japan alone. In that great undertaking Japan and the United States must work hand in hand in a spirit of friendly co-operation."

Most of Mr. Hodges' arguments are rehashes of those put forward in 1915 by the publisher of THE FAR EASTERN REVIEW, who, at that time, felt that the invitation of Viscount Shibusawa to co-operate with Japan in developing the resources of China was untimely and badly presented by those responsible for interpreting his ideas into English. The campaign launched during the Baron's visit to America, had for its slogan, "Japanese brains and American money to develop China," and, as one of his Japanese interpreters explained, such co-operation should take place in Yunnan, on the borders of India, right in the heart of the French sphere of influence. This at a time when France was battling for her life in Europe.

The publisher of THE FAR EASTERN REVIEW was the only writer, who, at that time, criticized the co-operation movement, as being unfair to China. Conditions have changed since 1915, and we are inconsistent enough to change our views accordingly. What we then condemned, we now approve of. Since then, the Chinese have been very active in seeking co-operation with Japan in the development of their resources. Many large and important Sino-Japanese companies have been organized. The Chinese have no objection to co-operating with the Japanese, or of selling rights to the highest bidder, and then calling upon America to pull them out of the hole. THE FAR EASTERN REVIEW is still most heartily in favor of bonâ-fide Sino-American co-operation, but we are opposed to the intrigues which have used this co-operation, as the instrument to get the American government involved in serious international disputes.

Co-operation between Japan and America in China has taken on a much broader significance than when it was first broached by Viscount Shibusawa. If China is to be placed upon her feet and made prosperous, only the United States and Japan working in full understanding can bring it about. Mr. Hepburn explained the broader side of this co-operation, when he told the Japanese bankers that the world looks to America and Japan to preserve the gold standard, and co-operate to restore the credit fabric of the world. It is time for Mr. Hodges and The Far Eastern Bureau to wake up to realities, and lend their assistance to the cause of peace and good understanding, instead of trying to discredit those who disagree with their views.

Marine Insurance in Japan

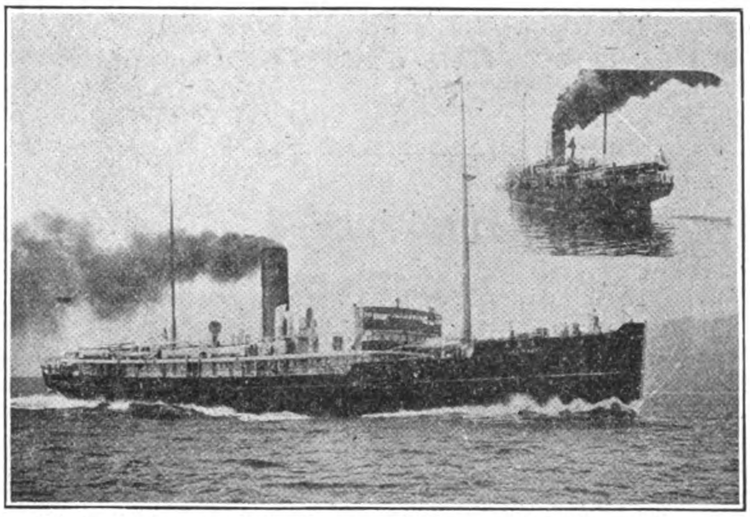
FORTY years ago there was no insurance company in Japan. To-day there are thirty companies doing marine and fire business and eight transacting fire only. The business received a great stimulus during the European war, no less than sixteen companies having received the sanction of the Department of Agriculture and Commerce, and, in addition, nine other companies have been organized or projected, and, at this writing, are awaiting government authorization.

The Tokyo Kaijo Building, Tokyo

During the war period the shipowners, in obedience to the marked Japanese tendency to control associated businesses and thus to reap more than one profit, formed new companies, among them being the Fuso Marine, Asahi Marine, the Taisho Marine & Fire Company, a Mitsui corporation; a Kawasaki Dockyard insurance company, another belonging to the Mitsubishi group; and still others are spoken of in connection with the Nippon Yusen Kaisha and the newly-organized Kokusai Kisen Kaisha. In fact, the prominent shipping firms regard a marine insurance company as a requisite adjunct, just as either they have come to control shipbuilding yards in great measure or the yards have organized their own operating corporations. Naturally, the enormous values of shipping and cargoes and the opportunities for war insurance enabled the business to make great strides in Japan as well as everywhere else. The Osaka Marine & Fire (ex the Osaka Fire & Marine), which, although organized in 1893, had not been suc-

cessful, also was reorganized with substantial backing and entered the active marine field.

The abnormal growth of Japanese shipping, due to the scarcity of tonnage caused by the absorption and destruction of the war and the great increase in steamship values and general commodities, contributed to the pressing demand for insurance. There was no German element to replace in Japan, the organization of new companies having been to meet a demand created locally by the war. Japan now finds herself in the position of other countries. It remains to be seen how the war status can be maintained in normal peace times. Some companies of war-times may have to pass through the usual ordeals. Japanese marine insurance companies still have to attain permanency before they can create their own market in the Far East.



Channel Steamer of the Japanese Government Railways, Shimonoseki-Fusan and Aomori-Hakodate (top right-hand corner)

Thirty-eight Japanese companies (thirty fire and marine and eight fire) have assets of approximately $85,000,000 all told, of which $45,000,000, or more than half, is in the hands of the Toyo Marine & Fire, subsidiary holdings included. In addition to holding a commanding position in the field, the Tokyo Marine & Fire also is the oldest of the Japanese companies, so that the general early history is its own history as well.

Its story goes back to 1878, and its career is closely interwoven with the commercial progress of Japan. As was the case with many other representative institutions, Baron Shibusawa's name is intimately connected with the earliest history of the company. The daimyo, or old feudal lords, were interested in the commercial movements then beginning to take root in Japan, which, despite the shipbuilding prohibition of centuries, remained primarily a maritime country, and the baron, then Mr. Shibusawa, realized that marine insurance was a necessary corollary of the world-wide activity that Japan was about to display. He secured the backing of the present Count Okuma and Yataro Iwasaki, shipowner and founder of the famous Mitsubishi company, and enlisted the support of the peers.

Government sanction was obtained in 1878, and, early in 1879, the company was organized with a capital of Y. 600,000, of which about 80 per cent. was contributed by the promoters and the remainder by merchants generally. On August 1, 1879, the Tokyo Marine Insurance Company (the name under which it first operated) opened its doors for business in the Nihonbashi district of Tokyo. Hard times were met, which Mr. Masuda, the manager, tided the company over. With the opening of branch houses abroad by Japanese merchants, the company, which had confined its operations to near waters, also expanded and established a small general agency in London in 1890. A few years earlier it had obtained from the government a guarantee of Y. 400,000 for its policies. The story of Japanese government aid to commercial ventures, it may be remarked, unquestionably would be an unusual chapter in the world's economic history, if narrated.

The decade of the nineties brought the company no added prestige, and, despite an expansion of connections in Oriental seas, its business, on the whole, was not profitable. For many years dividends had been uncommon, and disasters at home and by foreign connections were so severe that the capital, which had been increased, was cut down by one-half.

Nevertheless, others were not deterred from trying their hand, and new ventures were launched, some of them after the successful issue of the war with China in 1895. The new companies were: The Imperial Marine Insurance Company, 1893; Nippon Sea & Land Insurance Company, 1893; Nippon Marine Insurance Company, 1896; the Osaka Fire & Marine Insurance Company, which, however, met hard times and was dormant for many years. It was not long before the Nippon Sea & Land Company opened an active agency in London, only to close it quickly because of heavy losses suffered there, and it liquidated in 1901.

Thus, at the end of twenty years, the Tokyo company, the pioneer, was no better off than it was on the day of its founding, and other companies had had no better luck.

In 1899, the Tokyo company brought back from London, Kenkichi Kagami, who had been sent there in 1894 to study the business, and appointed him manager of the company at the Tokyo head offices. After twenty years, all the company had to show was a paid-up capital of Y. 375,000, the only working resources. It was do or die. The change in management and methods brought about a recovery from which there has been no relapse.

When the Russo-Japanese war came in 1904-1905, the Tokyo company's finances were on a sound basis, by virtue of progressive executive policies, coupled with conservative underwriting and the husbanding of its marine profits, so that it was able to care for the war risks which Japanese merchants wished to cover. The profits of these years and the successful conclusion of the war were incentives to the creation of new companies and also of established fire companies adding marine departments, and, moreover, of some of the marine companies opening up fire departments.

Both the Kobe Marine & Fire and the Tomei Fire & Marine were started in 1907. Some of the new companies established themselves successfully locally, but the Tokyo alone went in for a world-wide business between the Russo-Japanese and the world wars. The Tokyo has aggregate assets of $42,693,546.27 and surplus over capital and all other liabilities of $28,176,944.32, as shown in its annual statement for 1918 to the Insurance Department. These reserves have been built up entirely on marine business under the management of Mr. Kagami since 1899.—*Pacific Marine Review.*

Banking News

The Asia Banking Corporation with its Head Office at 35 Broadway, New York, has just opened an office in San Francisco, in the Robert Dollar Building, 301 California Street. This is a logical step in the development of the Corporation's organization which is designed to supply complete and direct banking service to American business interests engaged in trade with China and all other sections of the Asiatic Continent.

The rapid growth of the Asia Banking Corporation is in itself an evidence of the increasing enterprise of American interests in Far Eastern trade. This banking institution established in the latter part of 1918 now has nine branches in the Far East, namely at Shanghai, Hankow, Peking, Tientsin, Hongkong, Changsha, Canton, Manila and Singapore. The service available through this chain of active branches has been much used by merchants in the Eastern part of the United States, through the Head Office in New York, and will now be equally at the convenience of interests on the Pacific Coast through the new San Francisco office.

American Engineers in Siberia

Admirable Records

AN ambassador's words always claim attention. Those spoken by the Hon. Roland S. Morris, U.S. ambassador to Japan, at a luncheon given in the Engineers' Club of Philadelphia on September 14th, 1920 were such as to be of interest even to engineers whose regard for matters other than mechanical is, as a rule, merely casual. In speaking of the part played by well-known engineers in Siberia Mr. Morris said: In May, 1917, John F. Stevens went to Russia as head of the American railway advisory commission to study this problem and subsequently was appointed advisor to the Russian government under the Kerensky régime.

Mr. Stevens brought to that task almost a half century of continuous engineering work in all parts of the United States and a reputation for executive ability and for judgment that had been won in some of the hardest of the engineering problems that lay before our country in the days between the 70's and 90's. He organized under him the railway service corps, and it may be possible that some here were members or were associated with the corps. It was the plan that these men should go into Russia by way of Siberia and assist in the reorganization of the Trans-Siberian and Chinese Eastern Railways which were in a serious state of disorganization—a long line of communication from Vladivostok to Moscow, which was relied upon to carry supplies landed at the port of Vladivostok in order to build up the fallen fortunes of the Russian Army. But conditions in Russia proceeded much more rapidly than the plans for the railway reconstruction. The Kerensky government fell before Mr. Stevens could get his engineering corps of some three hundred or more men—picked men from all the railroads of the United States—men like Col. George H. Emerson, who was the actual head, or general manager of the Great Northern, and division managers and representatives of all departments of construction and operation chosen for their peculiar abilities in those lines. They went over on transports and arrived at Vladivostok just as the Bolshevists took charge of the harbor of Vladivostok and Bolshevism had spread from Moscow directly along that long line of 5,400 miles to Vladivostok, largely following the railroad, which is the one link connecting the central and European portions of Russia with the Pacific provinces. The American engineers were compelled to move out of the harbor temporarily and return to Nagasaki, Japan, and remain there for several months—until March, 1918—before Mr. Stevens decided that the time was propitious to attempt to reorganize the Chinese Eastern and Trans-Siberian Railways for the purpose of keeping open into Russia this one medium of communication through which America could concretely express the interest she had in Russia and its development and render the help which had been promised from the time of Mr. Root's commission. The help demanded was instruction for Russian personnel and railway materials—engines and rails and ammunition, if the war should continue, because, when Mr. Stevens first took his men over the Bolshevists had not yet made peace with Germany. But even more than that was it necessary if possible to prevent total chaos which would occur over the whole Siberian continent, possibly extending to Manchuria and China if the railroad should cease to function. There is probably no place in the world where the community is more dependent on their railroad than along the line from Vladivostok into Manchuria, and then to Harbin and from Harbin through Western Manchuria and Siberia past Lake Baikal to Irkutsk and from Irkutsk continuing far away to the Ural Mountains and beyond. The development has been almost exclusively in the territory lying along the railroad.

ROLAND S. MORRIS

American Ambassador to Japan, who was called from Tokio to Washington to take an important part in the series of conferences with Baron Shidehara, the Japanese Ambassador to the United States, looking to the final settlement of the difficulties that have arisen between the two countries.

Loyalty of Russian Workmen

When I speak of the Trans-Siberian Railroad I am speaking of a system which is composed of a series of companies organized by the Russian government and, prior to the revolution, controlled through the government. These companies are all concentrated into one system, and, of course, when the revolution broke that whole system fell apart; its organization went to pieces; it was a government organization and one of the most extraordinary developments that Mr. Stevens again and again pointed out to me which had been beyond anything in his experience was that in spite of the fact that for a long period of months there were no managers functioning on any of those railroads—no heads operating—that such was the training and the loyalty and the devotion of the body of the Russian workmen operating those railroads they kept that road open and those trains running through one whole winter with the thermometer below zero and knowing at no time whether

they would get a cent of pay—an extraordinary movement of the men themselves and one that ought always command the admiration of the world.

The Chinese Eastern Railway

It was to help those men to keep the roads open that Mr. Stevens felt that our engineers were in a position where they could go in and undertake the supervision and assist the Russian personnel. But the moment that we started, as there was no Russian government in Siberia, our engineers faced a very interesting situation. The Chinese Eastern Railway, which is the second link of the Trans-Siberian system, has been—is, I might say—one of the greatest trade routes of the world and has been the source of much discussion ever since the time its construction was first contemplated. It was built by Russia with funds supplied by France through territory actually a part of China, with the sea connections to the southward on the South Manchurian Railroad, owned by Japan (since the Russian-Japanese war).

Administration Building, Chinese Eastern Railway, Harbin

Of course, the question arose: Did we perhaps have some ulterior motive in coming in at that time to operate a railroad that represented so many different and possibly conflicting interests? One had to recognize that Japan, for instance, had an immense interest in the operation of the Chinese Eastern Railway, which was the great trade route tapping the whole of the Siberian territory as well as through Northern Manchuria and was the source of the freight and material that would come and exchange at Kuancheng-tzu, the end of the South Manchuria Railway, in order to go down, through the province of Sheng-king to old Port Arthur.

On the other hand, it was equally clear that China could not contemplate without some very definite understanding the operation of a line which ran through her territory, especially when that line was a vital element in the political control of the region. Then again the French quite naturally felt, after the millions and millions of francs that had been poured into Russia prior to the war in the form of bankers' loans, that they had a very definite interest in the future of a railroad to which they had contributed a substantial portion of the cost, taking in return bonds of a government that had ceased to exist.

Railway Station at Harbin

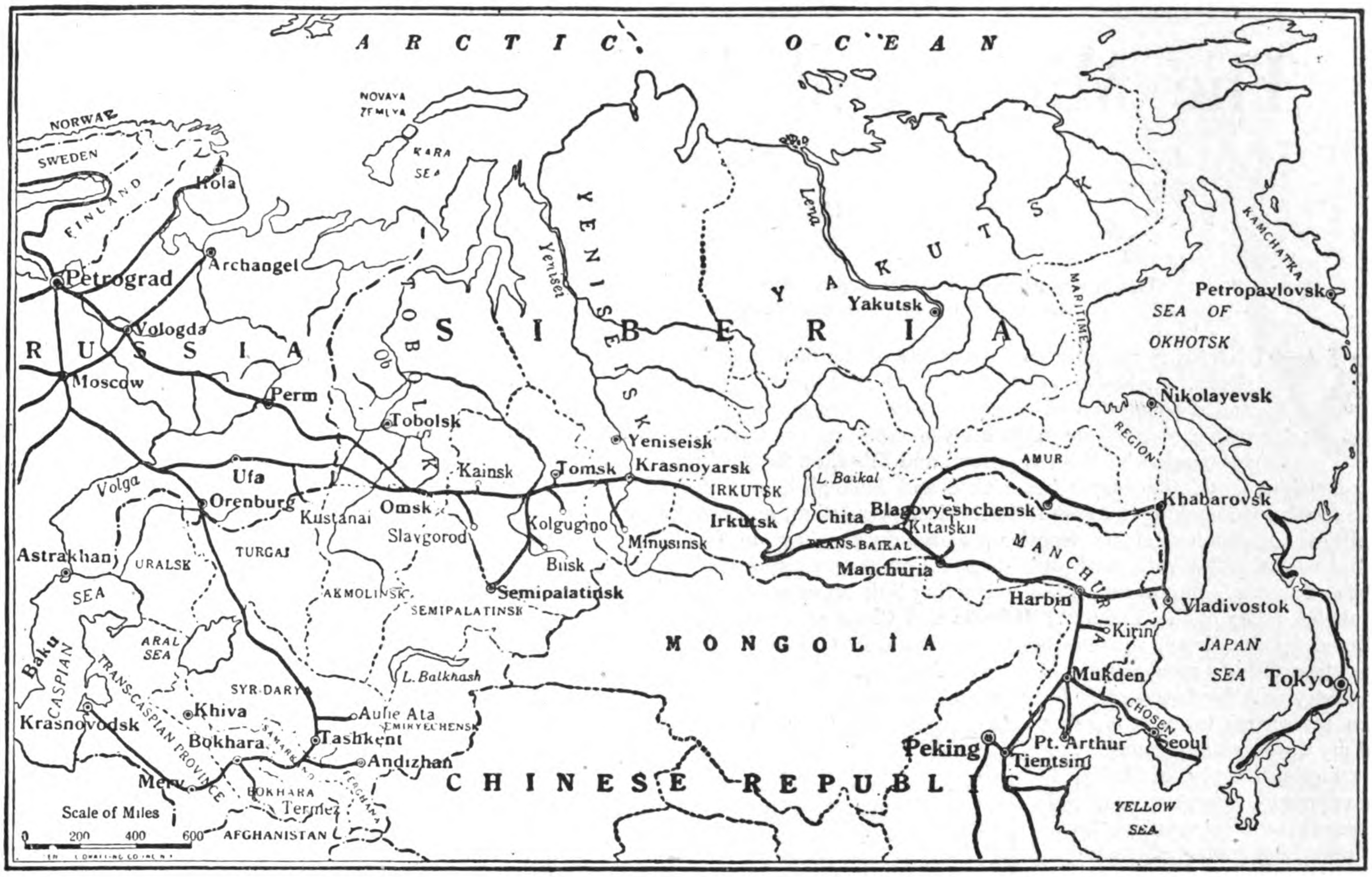
The Inter-Allied Committee

For all those reasons, it did seem that if we could obtain some general agreement among those interested which would permit the operation internationally of this great trade route, we would that much more be aiding toward the stability of Siberia, and eventually of Russia, and it was that which resulted after continued negotiations in what is known now as the inter-allied agreement for the control and supervision of the Chinese Eastern and Trans-Siberian Railways. Under that agreement there was appointed an Inter-Allied Committee, consisting of representatives from each of the countries—from China, Great Britain, France, Italy, Japan, Russia and the United States—who should have to do with such problems as financing and general supervision, such problems as would necessarily come within the purview of a board of directors of a railroad company. Under the control of the inter-allied committee two boards were created, a military transportation board and an inter-allied technical board, on which latter was a qualified engineer from each of the countries represented. It was provided in the agreement that the president of that technical board should be Mr. John F. Stevens, the American engineer, and the American representative.

This board, with Mr. Stevens as its head, sat down to try to work out the operation of the Trans-Siberian system, faced by bitter civil war, the menace of undisciplined Cossack bands and the jealousies of factions and conflicting nationalities. Mr. Stevens struggled bravely for a period of one year. The railway was guarded in part by our American troops, in part by Chinese troops, in part by the Czechs, who had come through Siberia and who were still there, finally by contingents of Japanese troops. We had, as it were, a miniature league, of the great powers operating a large system which had gone temporarily into bankruptcy, because of the failure of the government which had previously controlled it.

Vicissitudes

Such was the task undertaken by Mr. Stevens with the assistance of engineers who had been trained on our own railways and had wrestled with the same problems of the long haul, the broad gauge and the heavy grade, and the problems of winter weather such as our engineers face on the Northern Pacific and across the Sierra Nevada Mountains. And what a work they did! I wish I had the time to tell you something about the difficulties of those men in a country where they did not know the language; in a country torn by civil war; and where they were compelled to operate through a Russian personnel who had never understood anything about the modern treatment of labor. In addition they were called upon to overcome the friction and the irritability that accompany a political revolution involving the whole territory. The wonder is that Mr. Stevens—backed by his experience in the management of the Great Northern road, his constructive work on the Panama Canal, and his big, generous philosophy of life—kept



SIBERIA AND ITS RAILROAD

This railroad, or at least that portion of it east of Omsk, is now being managed by Americans. The present Siberian Government, headed by Admiral Kolchak, is responsible for asking the Americans to take over this work

his temper, his poise and his judgment; and we have him to thank that to-day from Vladivostok up to Irkutsk, right into the Bolshevist territory we have passengers going and freight moving, in spite of all those disadvantages.

A Unique Example of an American Engineer

The time came when our national feeling was of such a character that, war being over, we could not any longer hold our own troops in Siberia, popular feeling was very much against it and the men wanted to go home. The troops were therefore withdrawn. With the troops went the majority of our engineers, and I am frank to confess that it was with considerable regret that I saw our men abandon a task only half finished. But this was the comfort, that under them they had Russian engineers who had co-operated with them and had shared the benefit of the training of our own engineers in modern methods of operation. But the Russians did request, and Mr. Stevens did consent, to remain with them, and he is to-day with five of his staff sitting in Harbin—perhaps the most unique example of an American engineer that can be found anywhere in the world. Having passed over sixty years of active life, he is calm, cool, far-visioned, with all his personal ambitions, I think, by this time satisfied, with only one ambition remaining—to serve his country as best he can, and, as he would say himself, to make a successful job of this task which he has undertaken. He is sitting in his

small apartment at Harbin exercising a moral influence that is really most extraordinary. It is a wonderful thing as you watch the people Chinese generals, office, day by day, as he endeavors to counsel pour through that Manchurian generals, Japanese generals and civilians and bureaucrats and Cossacks, Frenchmen, Englishmen and Americans of all kinds who look upon him as the disinterested factor in the whole bewildering situation.

It is an extraordinary service that he has given to the building up and maintaining and operation of those railroads. I am hopeful that the work which the engineers did in co-operating with the Russians will not be wholly lost when it comes to the final reconstruction of that great system. Of course, the future demand for material of all kinds is going to be immense. From the fund which was appropriated to him at the time the Root commission reported that it was necessary that aid be given to the Russian railroads, Mr. Stevens is still getting what is essential to keep the wheels going on the Chinese Eastern Railway. He has endeavored to keep himself outside of political complications until such time as Russia may have a stabilized government with which the nations can deal.

I am still hopeful that the allied nations will be able to find some new method of maintaining and operating this tremendous system, which is not only a matter of interest to those nations immediately involved, but which means in its operation the development for the good of the whole world of that immensely wealthy region which is going to be the very background and the strength of the great Russia of the future.

The Mines and Minerals of Yunnan

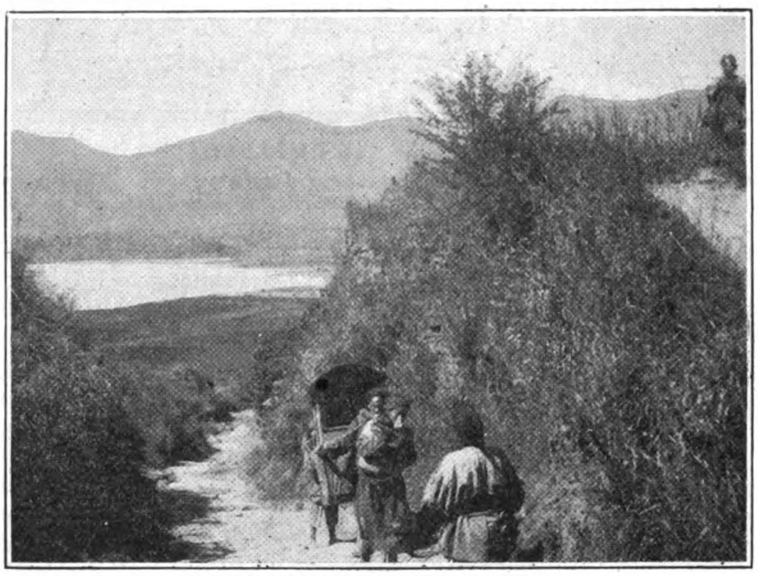
South China

By J. COGGIN BROWN, O.B.E., D.Sc. M. Inst. M.M., F.G.S.

Geological Survey of India

The author gives a description of the mineral resources of Yunnan, the most south-westerly of the Chinese Provinces, adjoining Burma and Tongking

YUNNAN is the most south-westerly of the provinces of China. It has an area of about 150,000 square miles and a population of approximately eleven millions, of whom roughly one-third are Chinese. On the west it is bounded by Burma, Assam, and Tibet, on the north by Ssuch'uan, on the east by Kueichou and Kuanghsi, and on the south by Tongking. Apart from its size, population, and the political significance of its frontiers, marching as they do for hundreds of miles with both British and French possessions in Asia, Yunnan is important as the connecting link between Burma and the valley of the Yangtze. If India and China are ever connected by a railway, the line must pass through Yunnan. The province yields a great variety of natural products, and its mineral industry only needs transport facilities and the application of modern knowledge to make it a first-rate importance. In the course of my duties as an officer of the Geological Survey of India, I have made extensive journeys throughout the country, have studied its geological features, and have investigated its mineral resources. I am indebted to the editor of *The Mining Magazine* for the present opportunity of summarizing my official reports, and of drawing attention to the potentialities of an important though comparatively unknown land.



The Road from Mengtsze Kailiwan

GEOGRAPHY.—Western Yunnan, lying between the Burma frontier and the Mekong, is occupied by the north and south-running ranges separating the upper valleys of the Irrawaddy, Salween, Mekong and Yangtze. In the northwest these ranges attain heights of 15,000 to 20,000-ft. above sea level, and the minimum elevation of the rivers is about 7,000-ft. Further south the heights decrease, and elevations of 5,000 to 7,000-ft. prevail in the Mekong ranges, the river itself being nearer 2,000-ft. Central Yunnan is built up of a series of ridges forming a compressed arc turned toward the south, the higher peaks of which are from 9,000 to 14,000-ft. above the sea. The drainage flows into the Mekong and Red Rivers on the south, and into the Yangtze on the north, often through deeply-dissected gorges. In Eastern Yunnan a series of irregular mountain chains trend north-north-east and south-south-west. Toward the north, heights of 8,000 to 11,000-ft. are reached. Further south in the region of the lakes, ridges of 6,000 to 8,000-ft. are the rule. Characteristic of Yunnan are its fertile plains, small, flat-bottomed valleys lying among the mountains. They occupy about one-fifteenth of the total area and support one-third of its population. Practically all the walled cities are built on such sites at elevations of 5,000 or 6,000-ft., with the ranges rising 3,000 or 4,000-ft. above them.

INTERNAL COMMUNICATIONS.—Yunnan suffers from lack of efficient ways of transportation. Though some of the greater rivers of the earth traverse it, they are of no practical service for boat transport. They flow swiftly in rocky channels, liable to seasonal floods and often at the bottom of precipitous cañons. Wheeled traffic is non-existent, and goods are carried by pack mules, or, more rarely, by bullock trains and porters. The roads of Western China have been abused by every traveller from Marco Polo onward. Zigzagging up the mountain sides and wandering over the plains, these paved roads extend for thousands of miles. Skilful engineering feats for the period in which they were made, the physical character of the country and the inertia of its Administration are jointly responsible for their condition to-day. "Good for ten years and bad for a thousand" is an appropriate Chinese maxim regarding them.

TRADE ROUTES.—There are four great arteries of communication between Yunnan and the outside world. These are the following:

(1) The Bhamo-Têng-yüeh route, which is the main trade road connecting Bhamo with Têng-yüeh, Tali Fu, and Yunnan Fu, the capital of the province.

(2) The Tongking-Yunnan railway, which starts at Haiphong on the Gulf of Tongking, runs to Laokai on the frontier, and thence to Yunnan Fu.

(3) The Yangtze route, which passes through the heart of China. Steamers can ascend to Ichang, and thence junks proceed to Sui Fu in Ssuch'uan, only one stage by road from the Yunnan boundary. The Yunnan portion of this route claims the distinction of being the most difficult and most inhospitable of any of the main roads of Western China.

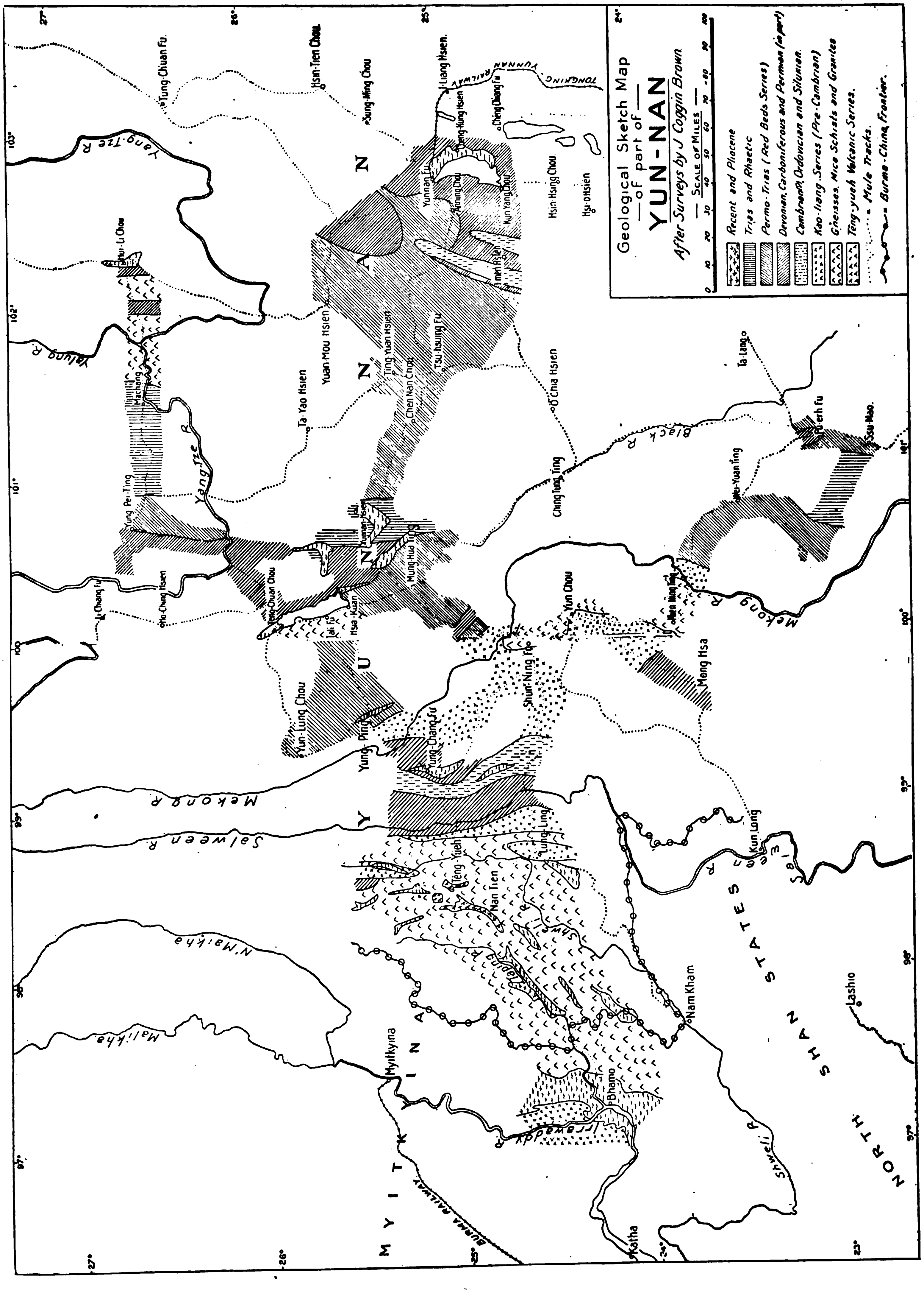
(4) The West River route, which leads up the West River from Canton, through Kuangtung and Kuanghsi to the borders of Yunnan. Boats can ascend to Paise T'ing, one day's march from the Yunnan border.

Other roads enter the province, but they are not to be compared in importance with those mentioned.

PREVIOUS WRITERS.—In the account of Doudart de Lagree's journey through Indo-China in 1866-1868, B. Joubert has given some account of the geology of the parts of Yunnan crossed by the expedition. ("Voyage d'Exploration en Indo-Chine," vol. 2, pp. 173-264. Paris, 1873).

A Chinese work by Ou Ki-tche, at one time Viceroy of Yunnan, and Hu Kin-sen, prefect of the city of Tungchuan Fu, was written in 1850. It is entitled "Tien nan kouang tchang tou lou," and deals with the production of metals in Yunnan and the means employed by the Chinese for their extraction and treatment. A translation of this important work into French has been made by a Chinese scholar named Ko, and it appears in the account of Doudart de Lagree's mission mentioned above.

Rocher in 1880 gave some account of the mines of the province


Geological Sketch Map
of part of
YUN-NAN
After Surveys by J Coggin Brown
Scale of Miles
Recent and Pliocene
Trias and Rhaetic
Permo-Trias (Red Beds Series)
Devonian, Carboniferous and Permian (in part)
Cambrian?, Ordovician and Silurian
Kao-liang Series (Pre-Cambrian)
Gneisses, Mica Schists and Granites
Teng-yueh Volcanic Series
Mule Tracks
Burma-China Frontier
Yang-Tze R
Mekong R
Salween R
Black R
Irrawaddy R
Shweli R
Yunnan Fu
Tali Fu
Teng-Yueh
Bhamo
Myitkyina
Lashio
Katha
Nam Kham
Yung-Chang Fu
Shun-Ning Fu
Ssu-Mao
NORTH SHAN STATES
MYITKYINA
YUNNAN

and Chinese metallurgical methods of the early seventies. ("La Province Chinoise du Yunnan," 2 vols. Paris, 1880.

Von Loczy, a geologist attached to Count Szechenyi's Chinese expedition, made a rapid traverse through a portion of Yunnan in 1879. His work was purely geological. ("Die Wissenschaftlichen Ergebnisse der Reise des Grafen Bela Szechenyi in Ost-Asien," Vienna, 1892).

Duclos accompanied the Lyons Mission in various parts of China during the years 1895-1897, and has published a report on the mines and metallurgical industries of Yunnan, Kueichou, and Ssuch'uan. ("La Mission Lyonnaise d'Exploration Commerciale en Chine," Lyons, 1898, pp. 283-314).

Leclère, "Ingénieur en chef des Mines," acting in touch with the mission under Guillemoto which had for its object the question of the extension of the railways of Indo-China into China proper, made extensive traverses in the provinces of Yunnan, Kueichou, and Kuanghsi about 1898. ("Etude Géologique et Minière des Provinces Chinoises Voisines du Tonkin," *Annales des Mines*, vol. xx., 1901, pp. 287-492).

Monod, "Chef adjoint de service géologique de la colonie," also toured in Yunnan about the same time as Leclère. ("Contribution à l'Etude Géologique de la Chine Méridionale," *Bull. Econ. Ind. Chine*, vol. xxxiii., 1898).

Logan Jack has published an account of his travels through China to Burma while escaping from the Boxer rising of 1900. Dr. Jack mentions the mineral deposits he happened to come across. ("The Back Blocks of China," London, 1904.)

Lantenois, "Ingénieur en chef des Mines et Directeur du Service des Mines de l'Indo-Chine," undertook the investigation of the mineral questions connected with the definite choice of a route for the Tong-king-Yunnan railway about 1903. ("Resultats de la Mission Géologique et Minière du Yunnan Méridional," *Annales des Mines*, vol. xi., 1907, pp. 298-503).

Davies, author of the most important work on Yunnan which has yet appeared, has referred to the mines seen by himself or members of his parties. ("Yunnan, the Link between India and the Yangtze," Cambridge, 1909).

Shan Women Workers in Yunnan

Deprat and Mansuy, members of the French Geological Service of Tongking, surveyed large tracts of Eastern Yunnan during the years 1909-1911. ("Mémoires du Service Géologique de l'Indo-Chine," vol. i., pts. 1-3, 1912).

The geological results of my own work have been published from time to time in the Records of the Geological Survey of India.

Geology.—Crystalline rocks form a zone about 70 miles wide, stretching from the Burma frontier to the Irrawaddy-Salween divide. They are probably a continuation of the gneiss of the Northern Shan States and the Ruby Mines district of Burma. The typical rocks are grey gneisses and schists of various kinds, containing bands of crystalline limestone and intruded by granite. Similar rocks occur in the T'sang Shan range near Tali Fu, between Shunning Fu and Mienning T'ing and in the Yangtze valley near its confluence with the Yalung. In the neighborhood of Ko-chiu in south-eastern Yunnan, masses of leptynite are intruded by tourmaline pegmatites which have yielded the well-known cassiterite deposits.

Between these basal crystalline rocks and the overlying Palæozoic sediments there is an ancient metamorphosed series of phyllites, slates, and quartzites with subordinate calcareous bands, to which I have given the name Kaoliang system.

Cambrian fossils have been found in slates in Eastern Yunnan by the French geologists, while rich faunas of Ordovician age and a few Silurian graptolites were discovered by me in the western part of the province.

Limestones belonging to the Devonian, Carboniferous, and Permian systems occur throughout the country, and indeed build up the greater part of eastern Yunnan. The middle Carboniferous attains an exceptional development in the east, where it also carries sandy horizons with coal seams.

A well-marked unconformity separates the limestones from the Upper Permian or Red Beds Series which forms the greater part of Central Yunnan. It consists of red sandstones and red, purple, and green shales not unlike certain facies of the Indian Gondwanas. The lower beds of the series contain thick bands of rock salt and gypsum.

Triassic strata come above the Red Beds. They have been preserved in certain areas by faulting, which has let them down into the older racks. The three great divisions of the system are well represented, especially in eastern Yunnan, and each of them contains coal measures, the most valuable being in the Lower Trias.

Yunnan has probably been a land area from Upper Trias times. The only known deposits of later age are the lake beds of the Tertiary period. Deposition is still in progress in some of these. They consist of sands, sand-rock, clays, and pebble beds with seams of lignite in places.

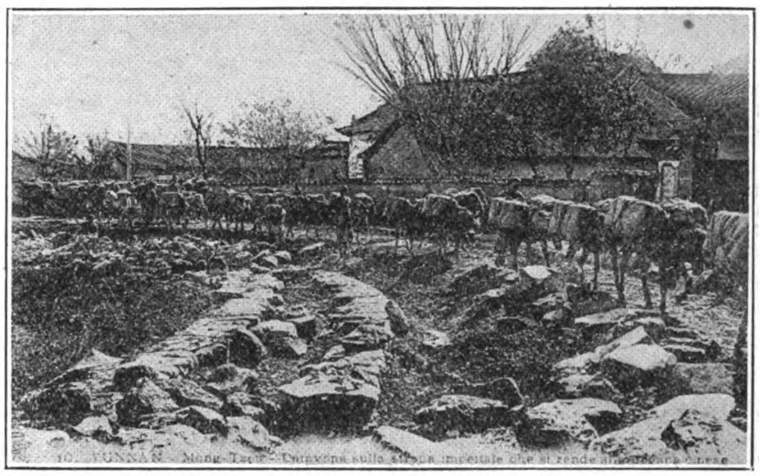
Chinese Mining Methods.—Mining and metallurgy in China must not be regarded from the standpoint adopted when considering these arts elsewhere. Separated from the rest of the world throughout a very long period of isolation, the Chinese have had to evolve for themselves methods of winning and concentrating ores and or smelting and refining the metals from them. In doing so they have developed a complicated form of mining administration. Modern indigenous methods in Yunnan are those of the ancestral Chinese. Their theories of ore deposition are purely magical. They erect shrines and make appropriate sacrifices at appointed intervals to the spiritual patrons of the mines, on the principle that it does no harm and may do good; yet they are skilful prospectors, capable miners, and resourceful metallurgists, but strictly limited by their ignorance of effective means of contending with the natural difficulties which beset the miner constantly.

Under the Manchu government there was a central office, a kind of mining bureau, in Yunnan which used to regulate affairs in which the authorities took a special interest, as, for example, the copper mines. The direction exercised was purely fiscal and not technical in any way. Officials were deputed to each important mining centre to collect the various revenues, in cash or in kind, for which each district was assessed, and to forward them promptly to headquarters.

A small proportion of the population undoubtedly regards mining as its hereditary occupation, and its professional spirit is kept alive by the various guilds and societies. But the great majority of the mining labor comes from the ranks of the agricultural community. They are members of peasant families driven off their farms by overcrowding, or some other cause, or else they are aborigines recruited from one or other of the numerous mountain tribes. Every important field draws its labor from a particular

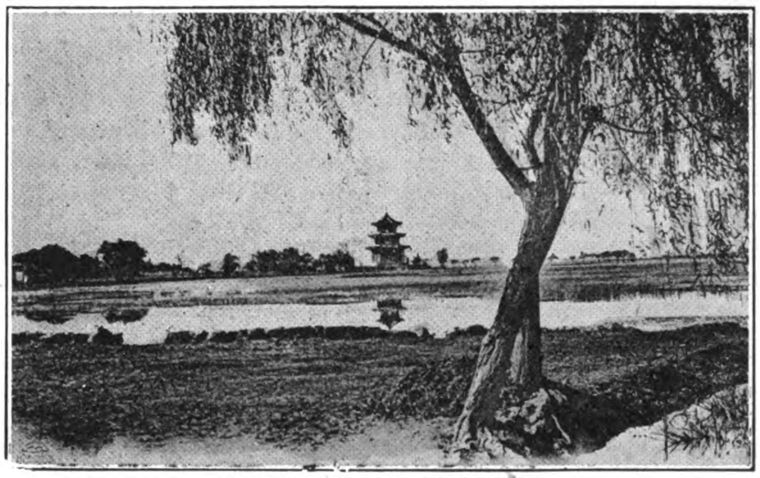
district. The Kochiu tin miners come from Linan Fu, Chennan Chou used to supply the Burma Ruby Mines, while Bawdwin obtains its miners from Hohsa and Lahsa, or the neighboring Chinese Shan States. It deserves to be more widely known what good mining coolies these men make under sympathetic management.

The internal demand for metals in Western China has resulted in a state of affairs which is unparalleled in any other Eastern country. I refer to the fact that the greater portion of the surface of the land has been prospected. It is no exaggeration to say that to all intents and purposes the deposits of metallic ores, with the extraction and uses of which the Chinese are acquainted, or which can be successfully treated by their methods, are known. In other words the engineer of the future, be he European or Chinese, will not be concerned so much in searching for new deposits as in proving the value of the deeper-seated portions of those worked in the past.


Caravan on Old Imperial Roadway at Mengtsze

COPPER.—Copper is said to have been smelted in Yunnan for a thousand years, and the province is supposed to have supplied the greater part of the metal used in the coinage of China. It is certain that a government department controlled all operations in the mining, smelting, and marketing of copper for centuries. Under the Manchus all the mines were regulated by the authorities who granted licences for mining, fixed the price of the metal annually, and strictly supervised the industry generally.

A Chinese official work, written about 1850, enumerated 35 important copper mines as well as many smaller ones. They are classified among 13 prefectures of the province, and figures are given showing the amount of tribute copper which each one was compelled to supply free to the government. From it we learn that 10 per cent. of the total production was demanded for the Peking authorities. The local officials were held responsible for this, and had to make good any shortage in the amounts assessed by the bureau of mines. Another 4 per cent. was taken for provincial purposes, and a third tax of 10 per cent. was levied to meet transport costs and road maintenance. No less than 24 per cent. of the copper output was thus requisitioned by the government.


Lake and Pagoda at Mengtsze

This Chinese work became obsolete many years ago owing to the exhaustion of some of the mines and the general abandonment of mining during the Yunnan rebellion, which broke out in 1854 and was not quelled until 1873. In the general devastation of the country during these years the mining industry received a check from which it has not yet recovered. According to this treatise, about the year 1850 the contributions of metallic copper for imperial and provincial purposes amounted to 6,000 tons. Too great a reliance should not be placed on Chinese statistics of this sort, but it may be asserted that copper mining was very important about the middle of the 18th century.

The French metallurgist, Rocher, travelled in Yunnan from 1871 to 1873. From his accounts it is gathered that after the commencement of the civil war the production of metals fell to practically nothing, and that when order had been re-established, the government hesitated to permit mining to be started again through fear of fresh disorders. Rocher states that the copper mines he visited were the deepest of any he examined, and he gives a description of the methods adopted in smelting.

Duclos, who visited Yunnan in 1896, states that at that time the annual production had fallen from 5,000 tonnes per annum of the decades before the rebellion to 1,100 tonnes. He gives a list of mines from which this output was obtained. The most important are in the Tungch'uan Fu prefecture.

Leclère, writing in 1898, estimated the annual production at the end of the 17th century at 6,000 tonnes, and at the time of his visit to the country at from 1,000 to 1,500 tonnes of metallic copper. Regarding the ore deposits he wrote that the ores bornite, covellite, and more rarely copper pyrites are found in slates of Carboniferous age, but that such occurrences are practically abandoned. Layers of cuprite and native copper intercalated in porphyrite are very much esteemed, but the absence of explosives often makes them unworkable. Sandstones impregnated with copper carbonates are said to be found in the Trias. The principal centres are Tungch'uan Fu and Weihsi T'ing in Kueichou. The smelters will only accept minerals capable of producing a matte containing 20 per cent. to 30 per cent. of metallic copper. The ores are handpicked at the mines to bring this about. Ores which do not contain more than 15 per cent. copper are thrown away and form dumps of considerable size. Large quantities of slags containing 3 per cent. copper must exist in the old smelting centres. These and other facts are held by Leclère to prove that Yunnan possesses considerable reserves of copper-bearing minerals, chiefly in inaccessible districts. Only general conclusions can, however, be drawn, and a special study of each deposit is essential before its value can be determined.

COPPER MINES OF NORTH-EASTERN YUNNAN.—I have not visited the important copper-producing district of Tungch'uan Fu. The following notes are from the writings of Leclère (1898) and Deprat (1910):—

The Loupou mines are in Carboniferous porphyries. One of the flows contains a flat band of barytes carrying native copper and its oxides. Workings are started on the flank of a hill, at points where the ore-bearing layer is thick enough to permit the driving of a low adit without breaking into the igneous rock. Mining only commenced in 1897. It is difficult to arrive at any conclusion about the value of the deposit because the thin portions are not worked. Masses of native copper too large to be brought out of the workings are left behind. About 100 men were employed. The picked ore contained 20 per cent. to 40 per cent. of copper, and production was not more than half a tonne per day.

The principal copper deposits of the district are comprised

within the Tangtan group, near the village of Tameti. In 1898 there were four principal mines:

(1) Sinchang, a little above and to the west of Taho. 300 miners were formerly employed here, but in 1898 work was abandoned owing to the distance of the mine from the smelters.

(2) Pesila, a lode in the Carboniferous, 18 kilometres west of Tameti. At one time it gave employment to 300 men, but was abandoned in 1898 for the same reason as in the previous case. It was managed by Japanese working on European lines.

(3) Laosinchang, 4 kilometres west of Tameti. Employed 200 men.

(4) Laochang, with Laomintsao and Sinmintsao. These are close to Tameti and found work for 1,100 men.

At Laochang there is a kind of stockwork. The ore was originally copper pyrites, but entirely altered to carbonate with concretions of barytes. The limestone massif is pierced by more than 300 workings, and drives up to 1,500 metres in length had been made on the best veins. Ores containing 20 per cent. copper are accepted by the smelters, but poorer material did not pay for treatment, owing especially to the high cost of the charcoal fuel which had to be brought from forests four days' journey away. The ore from Laosinchang was almost entirely copper pyrites. That from Pesila was mainly bornite with a little covellite. It was a difficult ore to smelt by the local methods. The Japanese attempted a preliminary roasting, but the scarcity of fuel made operations impossible and the deposit was considered unworkable. The slags obtained by the Japanese only contained a trace of copper. The ancient slags contained 3 per cent., but those in the vicinity of the smelters in 1898 has been retreated. The Japanese worked 8 furnaces, but there were others scattered about the district under the charge of subordinate Chinese officials. The total production of Tangtan was about 500 tonnes per annum. The crude copper was sent to Tungch'uan Fu for refining. Part of the finished product was sent to Peking and the remainder to Kongchan where a mint had been installed. The Chinese officer in charge of the copper business of the prefecture informed Leclère that the Japanese had spent a sum equivalent to four millions of francs in twelve years on the construction of the smelter, the establishment of a number of roads, and the exploitation of the Pesila deposit. The enterprise had not reached a profitable stage when the Chinese-Japanese war ended it. Copper manufacture was then started by the Chinese authorities again.

Twelve years later, in 1910, Deprat visited the Laochang region. He found that of the four groups already mentioned only Laosinchang and Laochang were being worked, the others having been abandoned. The Laochang deposit is formed in the fissures of cracked and brecciated limestone. The original pyritic mineral had been transformed into carbonate, as Leclère indicated, with abundant concretions of banded barytes. The limestone mass is riddled with innumerable workings following the lines of fracture, and the labor force employed was much the same as before. The output was 576 tonnes per annum, and the crude metal was still being refined at Tungch'uan Fu before shipment to Peking.

Deprat refers to other copper-bearing localities in the same district, two of the more important being Losuy where copper carbonates occur in a thin lode traversing Cambrian schists, and Molochang where chalcopyrite and copper carbonate are disseminated in thin quartz veins cutting sandstones and shales.

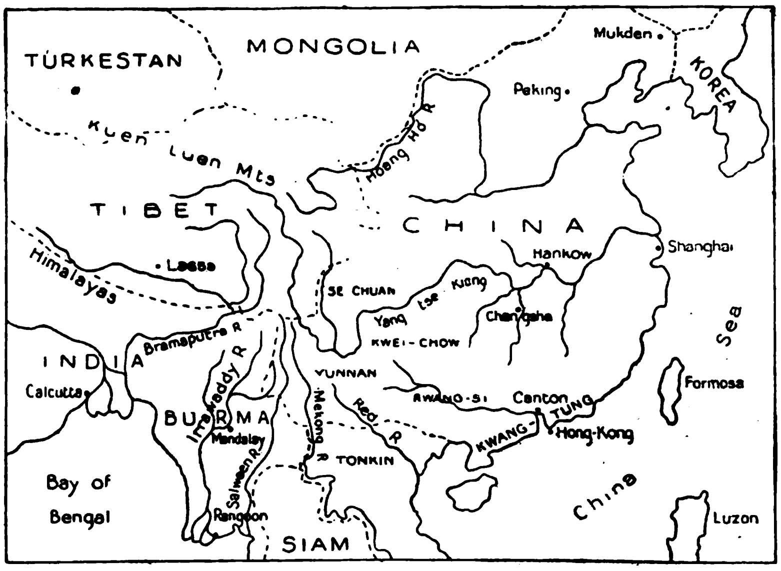
Copper Deposits of Eastern Yunnan.—Numerous copper deposits in Eastern Yunnan have been described by Leclère, Lantenois, and Deprat, but none of them appear to be of any great importance. According to Lantenois (1903), they are all in more or less direct association with eruptive rocks, such as andesites and basalts. He distinguished the following four types:—

(1) In contraction fissures and cracks of the eruptive rocks.

(2) Pocket deposits at the contracts of eruptive rocks and limestone.

(3) In irregular fissures in limestone in the vicinity of eruptive rocks.

(4) In more or less open fractures across limestone and shale.



Outline Map Showing Position of Yunnan

At the Weitouchan mine, 10 kilometres south of Mientien, a small town 20 miles east of Linan Fu, a thin vein following an irregular fissure in an eruptive rock, carrying quartz rich in bornite, chalcopyrite, and pyrite, is exploited. The extracted ore contained 20 per cent. to 25 per cent. of copper. In 1905 about 70 men were employed here, and the production was 60 tonnes of metallic copper per annum.

The Tienpao mine is situated near Petchen, which is a few miles northeast of Hsinhsing Chou, in the Ch'engchang Fu prefecture. About 1893 it is believed to have found employment for 1,000 men and to have produced 300 tonnes of copper per annum. In 1893, however, owing to the fact that mining had become hindered by the depth of the workings, only 40 men were employed and the annual output was not more than 30 tonnes. There were three interstratified ore bands with sandstone floors and shale roofs. The bands were 0.3, 0.5. and 0.6 metres in thickness respectively, but only one of them was being worked. The ore was found in the form of balls rich in copper carbonate. It was handpicked and washed, and yielded 20 per cent. of copper on smelting. Both Lantenois and Deprat consider that this deposit de serves attention.

The mines in the vicinity of Lunan Chou have been abandoned for 50 or 60 years. There are indications of 16 sets of old workings scattered around various localities, and they are either in the eruptive rock or at its contact with limestone. Large slag heaps exist, but they are not held to prove that the mines were important.

At the contact of the basalts and the Uralian limestone of the Pohsi neighborhood, small fractures containing copper carbonate have been mined, but they are of no economic interest. On the Devonian limestone plateau, between Lanmintsin and Tameti, there are numerous small prospects on nests of ore in the limestone or the eruptive rock. They are distributed in such an irregular manner that large-scale operations are out of the question.

Deprat has concluded that the copper deposits of Eastern Yunnan, within reach of the Tongking-Yunnan Fu railway, are not encouraging, and that the geological conditions are such as to confirm unfavorably the impressions furnished by the mines themselves. There are copper ores in the basic eruptives of the Permian and Moscovian, but the deposits are restricted and incapable of giving an output of any duration or size. Speaking generally, he believes that between Mêngtzu and Yunnan Fu conditions offer little encouragement; the crushing and folding of the rocks in the Himalayan movements almost completely dispel the hope of finding large mineralized fractures in them.

COPPER MINES OF THE YUNGPEI T'ING DISTRICT.—Yungpei T'ing lies seven days' journey to the north-north-east of Tali Fu at an elevation of 7,300-ft. above sea level and the mines lie to the west of the city in the direction of the Yangtze. The river flows in a north and south course, six or seven miles further west, between two well-marked though short ranges running parallel to it. Between these there is a series of lower cross spurs, separating the drainages of the smaller tributaries. Paop'ingch'ang is situated almost on the crest of one of these, dividing the watersheds of the Wulang Ho and the next stream, which joins the Yangtze 20 or 30 miles further south.

The country is built up mainly of limestones and contemporaneous igneous strata of Permo-Carboniferous age, the decomposed outcrops of the flows being seen in the gullies where the water-courses have removed the overburden, but, as a rule, a red clayey soil covers the ground and forms the smooth outlines of the rounded mountain tops. There is a little pine forest, but most of the trees have been cut down for charcoal manufacture.

Paop'ingch'ang is a typical Chinese mining camp. The sides of the valley are covered with dumps and have been dug up repeatedly in search of ores. The entrances to the levels are perched in all kinds of places on the steep slopes, the spoil heaps forming long glissades down to the stream far below. Great accumulations of copper slags are scattered around. The village is small and badly built, the water supply is poor, and stores of every kind have to be carried in from a distance.

The youngest rocks in the neighborhood are the white limestones of Permian (?) age which surmount the tops of the hills to the north and north-west. The dark fossiliferous limestones of the Permo-Carboniferous come below them, and are themselves underlain by a thick series of shales and sandstones of various colors. The portals of the tunnels go through these rocks. In association with them is the volcanic series, made up of lavas, tuffs, and ash beds, with layers of shale and grit between them. The lavas are often greatly altered at the surface, and it is not always easy to distinguish their true characters.

There are very numerous old workings in the valley, but the deposits which were being worked were entered from both sides of a spur which cuts into and narrows the valley. The mines are from 1 to 1½ miles from the camp, to which they are joined by a good mule track. I inspected the workings entered from the south side. These underground workings were of great extent. It is quite impossible to describe them in detail, forming as they did a perfect labyrinth. Suffice it to say that the actual working had been conducted with great skill and betokened considerable experience. The ventilation in the main ways was good, but in the remoter parts of the mine the air was very foul. There was not much water except in the lowest levels, and it was raised to the drainage adits by means of bamboo pumps. The general impression I received was that the mine was about exhausted as far as it was possible for the Chinese to go down. There was no systematic plan of operation, and thin quartz stringers were being followed in all directions. These carried sulphide ore in the form of erubescite with smaller quantities of chalcopyrite. Chalcocite, malachite, and azurite were also identified. In one part of the mine an old stope indicated the former presence of a vein 5 or 6-ft. thick. The miners confirmed this and said that it ran out 10 or 15 years earlier. Decomposition and metamorphism of the country rock had been profound, and it was impossible to arrive at any conclusions regarding the origin of the ores during the short time I was permitted to stay in the mine. I am inclined to think that the veins were in very irregular fissures of great variation in size, traversing shales, sandstones, and limestones, and also entering the eruptive rocks in contact with them.

The ores are carried to the surface in baskets by boys, and after the large pieces have been broken up, the material goes to the sorting tables, each of which finds employment for 8 or 10 women, who are very skilful at the work. The rich pieces were picked out and placed in baskets and the remainder went to the dumps. The latter are mainly gangue and low-grade ores, disseminated sulphides and carbonates. The water percolating through the dumps was of a bright blue color, and appeared to bear an appreciable quantity of copper salts in solution.

The rich picked ores, consisting chiefly of erubescite and chalcopyrite, are carried down to the smelters in the village. There they are roasted in large quadrangular kilns for three days, with ironstone, charcoal, and wood. The caked masses from the kilns went into the large blast-furnaces, the smalls and dust were washed, the heavier portions kept and smelted in a special furnace of smaller dimensions. Three sizes of blast-furnace were made use of, generally in benches of six. The largest were from 20 to 25-ft. high, but with a long opening in front, above the wall of the hearth. The other furnaces were about 15-ft. high, and there was also a still smaller type. The smelting operation took three days to complete in the largest furnaces, working day and night, and twelve hours in the smallest type. The blast was supplied from large cylindrical blowers worked by relays of coolies. The molten metal was not tapped, but when the reaction was completed the front of the furnace was broken in, leaving a bath of molten metal in the bottom of the hemispherical hearth. This was allowed to cool, and the process was hastened by spraying rice water on to the hot surface, which, as it solidified, was removed in plates. The charges for the largest furnaces were said to be as follow: Calcined ore 3 tons, iron ore 1½ tons, charcoal 3 tons, limestone 1½ tons. The amount of copper produced, according to my Chinese informant, was anything from $\frac{1}{5}$ to ½ ton.

The mines are said to be over 200 years old. About 100 years ago they are said to have produced some 1,700 tons of copper per annum, and to have found employment for 5,000 men. Later on production had dwindled to 110 tons per annum. In 1907 only 20 tons were produced, rising to 60 tons in 1909. About 1900 the total output of all the copper mines of the Yungpei T'ing district was about 150 tons per annum, but 6 years later this had fallen to approximately 30 tons. The operations at Paop'ingch'ang were controlled by a small syndicate which found employment for about 250 men.

Copper ores are worked at the following localities in the Yungpei T'ing district: Muerhp'ingch'ang, Tapaoch'ang, Pasala, Hsisiti, and Tungch'angho. Some of these are merely prospects, finding employment for a few miners, and they are all situated from one to three stages to the south of Paop'ingch'ang in the unsurveyed country between it and the Yangtze!

At Yungpei T'ing I obtained information, on good Chinese authority, that the following localities in the Lichang Fu prefecture, bordering Yungpei T'ing on the west, produce copper ores: Heipeishui, Kuho, and Lotzuchüeh.

SANCHIACH'ANG COPPER MINE.—This small copper-producing centre is situated five stages to the south-west of Yunnan Fu, in the upper valley of the eastern head waters of the Red River of Tongking. The hillsides are covered with screes of bluish-grey slates, but on the opposite side of the river limestones crop out. The latter are exceedingly broken up near their contact with the slates. The river flows in a gorge at an elevation of 4,000-ft. approximately, but within four miles on either bank the ranges attain heights of over 8,000-ft. There is a great limestone precipice rising up behind the village, and it is noteworthy that rolled blocks of a red granite were seen in the stream bed.

When Duclos visited this locality in 1897 he found that only one furnace was in operation, and this was the state of affairs at the time of my own inspection, although it is well known that before the Mohammedan revolt several more were in existence. In 1897 the annual production of copper was only about 40 tons, and I believe that this amount had considerably decreased at the time of my visit. The main entrance to the mine was high up on the mountain side, about 1½ miles south of the village. It took me over half-an-hour to reach the first working place. The country rock is an altered limestone, and the ore chalcopyrite with small amounts of enriched sulphides. According to Duclos several

well-marked lodes exist, but the ores I saw occurred in badly defined and rather thin zones of impregnation. However, I was only able to examine a small part of the mine. About 20 men were employed, and all low-grade ore was thrown on to the dumps. I doubt if there is much left in those parts of the mine which the Chinese have reached, but it might be worth examining to see if the deposits extend to any greater depths.

TATSANGKUANMIAO COPPER PROSPECT.—This locality is situated about two miles to the east-south-east of Tatsangkai, a village ten miles north of Menghua T'ing on the Tali Fu route. The country rock consists of soft red and white sandstones, interbedded with grey shales belonging to lower horizons of the Red Beds series. The shales contain pieces of bornite, about the size of a pigeon's egg, coated with thin crusts of decomposition products. Exploratory workings were being made in search of the ore. An old copper mine is said to exist at Huapang to the north-west of Tatsangkai, and copper ores are said to be mined and smelted at Kunglang, a large village on the northern side of the Mekong, about half-way between Menghua T'ing and Yunchou.

SHAHOCHANG COPPER MINE.—This place is about 15 miles to the north-north-west of Yungch'ang Fu as the crow flies, across the Mekong-Salween divide. In the vicinity, greenish slates and phyllites with a few bands of sandstone are intruded by an altered basic rock. Ancient slag heaps of considerable extent occur, and the mine was said to be in a very flourishing condition thirty years earlier. At the time of my visit about 70 men were engaged in reopening old workings. The hand-picked ore, mainly chalcopyrite, was smelted on the spot in a large blast-furnace of the type already described.

OTHER COPPER LOCALITIES.—The district of Huilichou, now in the province of Ssuch'uan but which formed part of Yunnan at one time, is famous for its copper mines. According to Davies there is a mine at Luch'ang, six miles south of the town. Mr. Way has mentioned others in a recent article in *The Mining Magazine* (July, 1916). I noticed small heaps of copper slags at several places on the southern route between Huilichou and the Yangtze. Davies believes more mining might be done in the northern part of the Huilichou valley if the Lolo country to the east was more settled. It is interesting to note that all the copper smelting of this region is done with coal or coke.

Copper ores also occur in the Weining Fu district of the Kueichou province, but the town is only 20 miles from the eastern frontier of Yunnan. The only importance of the district is said to consist in its copper, lead, silver, zinc, and iron mines.

Engineering Notes from Frontier Ports

MUCH progress has been made in the improvement of communications with the Tonkin frontier. The Lungchow-Namkwan-Langson road has been entirely relaid from Lungchow to the Lungchow Pass, a distance of some ten miles. The pass itself can now be crossed on horseback, a thing that was impossible the previous year. Eight miles of the Lungchow-Shuikow strategical and commercial road have also been built. Though no stones have yet been used in the making of these two roads, a horse and trap and even a motor-car can be driven over them for the short distances mentioned above. Unfinished as they are, it will take more than a year before both these routes prove beneficial to the local cross-frontier land trade, which, during 1919, as in previous years, remained insignificant.

Work on the foreign-style iron and concrete bridge which General T'an Hao-ming ordered to be built across the Caobang River at Shuikow started in November. The contract for this bridge has been given to a Chinese company of experts residing in Haiphong. The bridge when completed, is to be 70 yards long and 5 yards broad, and its estimated cost amounts to $49,000.

The Lungchow Electric Light Company inaugurated its installation on the 4th December. This company is being run under the patronage of Marshal Lu Jung-t'ing and General T'an Hao-ming. Its working capital, some $30,000, has been almost entirely subscribed by the local officials. The engine, which is sufficient to provide light for 3,150 lamps, has been manufactured in Canton by a local Chinese engineering firm and cost $9,600.

Mengtsze returns show that imports of iron and steel manufactures advanced from 1,057 to 4,704, due to the rails and other materials imported for the use of Ko-Pi Railway.

Prince Purachatra of Siam has made a trip to Yunnanfu to inspect the Yunnan Railway. The visit was not political, and his interest in the railway was due to his connection with the Siamese ministry of communications.—Wireless telegraphy has been installed in Yunnanfu on the railway premises. Commandant Peri, of the French Army, has arrived and has superintended the erection of a wireless apparatus, which a few days later received messages from Lyons and Manila. A more powerful receiver and a transmitting machine were put up some time afterwards. It is rumored that this is going to be taken over by the local government and that many other minor wireless posts are to be put up at various points of the province.

BRIDGE BUILDING NEAR TUNG-YUEH.—A new Customs barrier has been opened at Niuchüanho, some five miles from the frontier on the main road between Tengyueh and Myitkyina. The work of road reparation included the repairing and strengthening of the remains of a 260-foot long stone bridge across the Nangsung River, some 12 miles from Tengyueh; and three spans of 26 feet each were added to the southern end. The engineer is now at Siaohoti, some 7 miles from Tengyueh, and is there confronted with the reconstruction of another bridge that was washed away by a freshet in the summer of 1914. The high-handed action of cultivators in cutting through embankments for irrigation purposes whenever it suits them to do so, and of passers-by in using the wood of preventive works for camp fires, will always render repair work necessary, even if *force majeure* does not step in and destroy the work of months at one blow.—The worst sections of the Tengyueh-Yungchang road were repaired over a distance of 22½ miles to Siaopingho, half way along the second day's journey from Tengyueh, and a very great improvement in this abominable section is now apparent.

A New Booklet on Cotton

"COTTON and Cotton Manufacture" is the title of a booklet issued by The First National Bank of Boston, being a companion to its recently distributed booklet on "Wool and Wool Manufacture." These publications are the work of a member of the staff of the bank, and cover their respective fields in a manner never before undertaken. They explain all the details of the industries, but untechnically, and in a manner that can readily be understood by the layman.

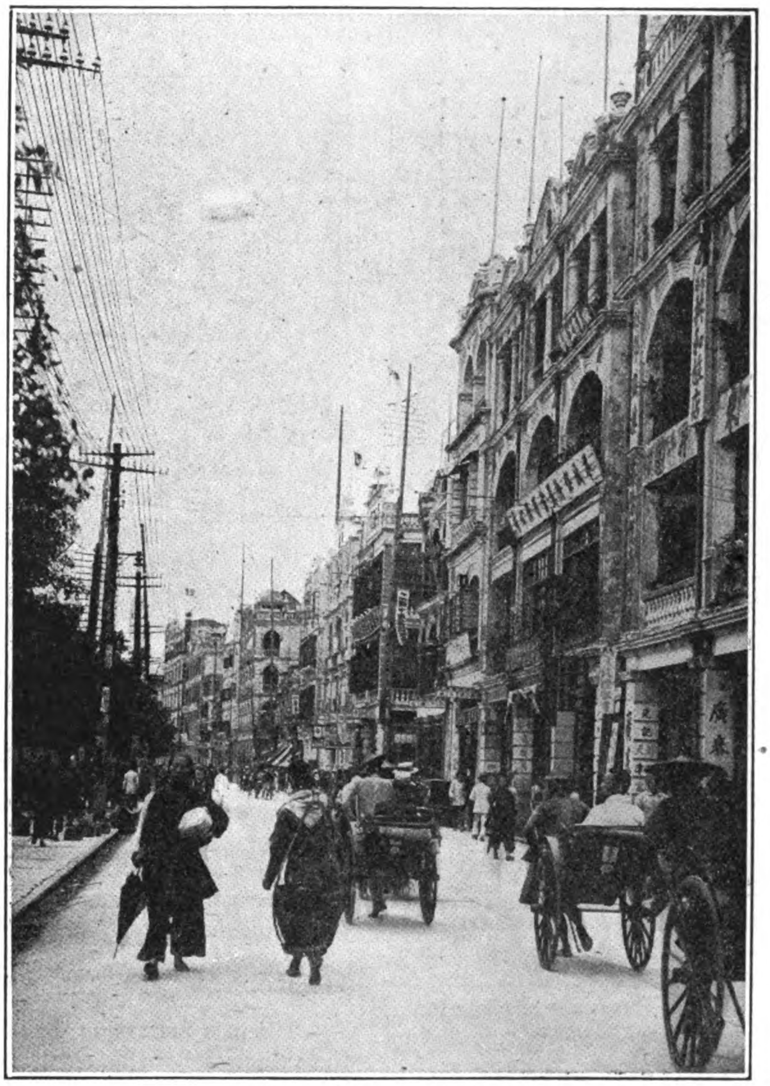
This booklet begins with the history, distribution, and cultivation of cotton. It describes the selling methods and the grading of the staple. The process of manufacture is covered in detail, from the receipt of the cotton at the mills to its delivery as finished goods. Then the position of the United States in the industry is discussed, with valuable statistics. Numerous illustrations add greatly to the value of the booklet, showing distinctly many of the intricate processes of manufacture. Many of these never have been publicly illustrated before.

It is interesting to note that of the 34,200,000 cotton spindles in the United States, 53 per cent. are in New England, and 30 per cent. of these are in mills which are customers of The First National Bank of Boston. Of the 672,754 looms in the country 56 per cent. are in New England and 32 per cent. of these are in mills that are customers of the bank. Customers of the bank manufacture about 90 per cent. of the textile machinery used in all the cotton mills of the United States.

Industrial Canton

An Adventure and Some Trade Reports

PERHAPS there is no other country in the world where schemes to bring product into its hinterland are more crafty and ingenious than they are in China. The combined skill and psychology of the Chinaman, Briton and American, makes a force that will circumvent any known or barely anticipated obstacle. This statement is not made without just cause. Besides the many episodes in which the combination has shown its almost invincible ingenuity comes another which the Peking correspondent of the *North-China Daily News* brings to light in very entertaining fashion. It appears that the Kuang-si military faction purchased a complete and modern arsenal some time ago, an arsenal which formerly was the property of the American government, and through the machinations of colleagues managed to get the very large shipment out of America. Five seaplanes were added to the shipment and were destined to the care of a British firm who seemed part and parcel, together with an American firm and the Chinese concerned, of the whole transaction. Boarded outside the three-mile limit by Lu Yung-ting's agents the vessel proceeded on its way to China but while en route strife in Canton undermined the party for whom the material was ordered so that the vessel had to make harbor, it is unknown where. Owners of the contraband cargo now made powerful efforts to dispose of their shipload elsewhere but without success, and notwithstanding vigilant precautions on the part of the American and British governments, the vessel, which had to reach some destination sooner or later, quietly steamed up the Canton River to be taken over on arrival by Chen Chiung-ming who had in the meantime become the lord of the land. That so rich a prize should fall into the hands of some one other than the purchaser does not detract from the skill in which the law was evaded. To land the material the law had to be circumvented—and where there's a will there's a way. The central government of China is said to have done quite a bit of unofficial grumbling in the last few weeks, and perhaps not without reason.



Modern Canton—The Bund

A more dignified aspect of Canton's trade is shown is a commerce report from the pen of Vice-Consul Walter A. Adams. Dealing with the trade in matches and fireworks this gentleman writes: Despite the boycott which came into operation during the later part of 1919, the value of matches imported were chiefly from Japan. During 1919 there were three match factories in operation at Canton, the Hao Ming, Kat Cheung, and the Tai Yik, using machinery imported principally from Japan. The Tungshan Match Factory is being constructed at Canton, and another is in process of organization at the Wongsha suburb. Some of the matches masquerading in this market as native goods are really imported and packed here with native labels.

On the demand for launches and motor boats, shipbuilding and paper factories is this:

Canton is strung out along the banks of the Pearl River and is intersected by numerous canals. It therefore depends to a considerable extent upon its waterways as a means of communication. There is a resulting demand for steam launches and motor boats for both business and recreation. Of late there are indications of a limited demand for speed boats. One motor boat recently constructed and launched by the Chu Kong Motor Boat Co. of Canton is capable of a speed of approximately 30 miles an hour. The principal launch and motor-boat manufacturers in Canton are Hip Tung Wo, Chu Kong Motor Boat Co., and Kwan Wo On. These plants are equipped to build small engines, but usually import the better grades.

Shipbuilding

The Kwang Nam Dock Co. is the largest shipbuilding plant in Canton and the only one equipped to build vessels of any considerable size. While the largest vessel yet constructed by it is of only 2,000 tons gross, the manager states that the plant can build iron or steel vessels up to 3,000 tons in size and will manufacture boilers and steam engines on order. During 1919 it built and launched two vessels, one of 1,600 and the other of 1,800 tons gross, as well as half-a-dozen launches of various sizes. The yard is equipped throughout with British machinery, with the exception of a few small machines of American make.

Paper Factories

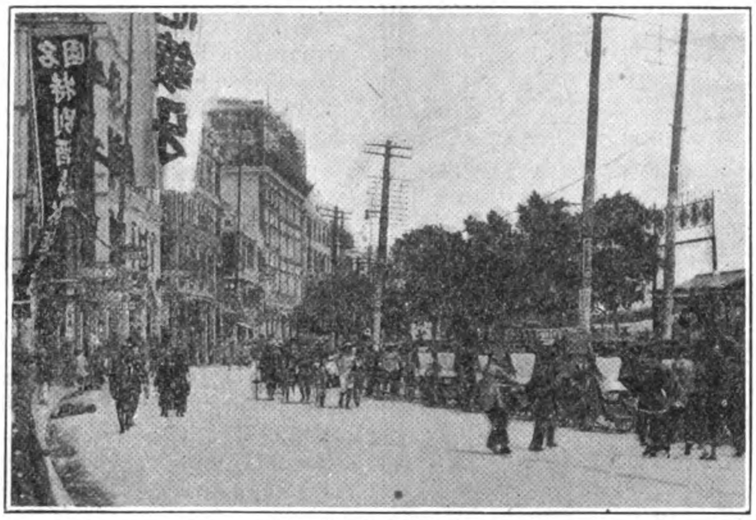
There are two factories in Kwangtung province engaged in manufacturing machine-made paper from rags and waste paper. One, the Mien Yuan Paper Factory, is located at Canton and has a daily output of more than four tons. Its machinery is of British manufacture and has been in use about 27 years. The other, the Kongmoon Paper Manufacturing Co. (Ltd.), is located at the treaty port of Kongmoon and represents an investment of approxi-

mately $290,000. It has a daily output of about three tons and furnishes employment to about 100 employees. Its machinery was made in Japan and has been in use about seven years. Motive power is furnished by two internal combustion engines, of which the larger, about 200 horse-power, was made in Great Britain, while the smaller one, about fifty horse-power, was made in Canton. The plant has its own electric-lighting equipment. The product of both factories is consumed chiefly as news and wrapping paper, being used locally and also exported to Hongkong and Singapore.

The North and East River districts produce from bamboo pulp and lime a fairly good hand-made paper which is burned during religious exercises and also used for toilet purposes.

The cement trade receives this comment:

Exportation of cement has declined greatly during and since the war. The exports in 1913, amounting to 71,865 barrels valued at $128,110, had fallen off in 1919 to 3,130 barrels valued at $12,-367. This decline, however, was counterbalanced by an increase in local demand, and the government cement factory at Canton is operating eight boilers at full capacity and turning out about 500 barrels daily. The product, though inferior to imported cement in quality, is much cheaper in price and is used largely in local construction. The limestone for its manufacture comes from the North River district of Kwangtung province.


The Canton Bund

Another view of the Bund

On the silk filatures is written:

There are in Kwangtung province approximately 150 filatures, of which about 130 are now in operation. During the latter part of the war only about 89 plants remained in operation, but since conclusion of peace filatures are resuming normal production. There are in the province a few silk-weaving factories using improved machinery, most of it coming from Europe and some looms from Japan. The greater part of the silk weaving in this district is done on hand looms, and while the product is narrow and of uneven texture as compared with American silks, it is not adulterated or weighted with metal and is usually strong and durable.

Comes the report on mines and mining which reads:

In future years mining activities will probably form one of the principal sources of revenue of the territory comprising the Canton district, and the subject deserves emphasis because of the potentiality indicated through available information. Mineral resources of the region are of wide variety and richness, including coal, tin, antimony, copper, iron, limestone, wolframite, lead, molybdenum, zinc, quicksilver, gold, and silver. Causes which until now have tended to obstruct any large-scale development of these resources may be summed up as general backwardness of the people, unsatisfactory internal conditions, and lack of adequate transportation facilities in places. Furthermore, the wide fluctuation in value of silver as related to gold at times automatically opens and shuts the door to foreign markets, discouraging attempts at steady production, and damaging organizations of trained workers built up by years of effort.

Comments on other commodities are as follows:

Electric Power Equipment

There is a growing market in this district for electric power plants and equipment. At present there are electric power plants in the Kwangtung province at Canton, Lo Ting, Waichow, Kongmoon, Sunwei, Sunning, Suncheong, Fatshan, Fakhoi, Kungyik, Machen, Yungki, Siulam, Shiuhing, Shakee, Chanchun, Sheklung, Shiukwan, Tungkoon, Sainam, and Taieung. In the Kwangsi province there are power plants at Lungchow, Liuchowfu, Kweilin, Pinglo, Moyun, Paklow, Wuchow, and Poseh. Many of these plants are very small and operated by internal-combustion engines. Canton and Fatshan have the largest installations. At Canton an American engineering firm is installing a modern electric power plant for the Kwangtung Electric Supply Company at a cost of approximately $1,300,000. The new equipment, which is American throughout, consists of two 2,500-kilowatt turbine units, planned to include ultimately two 5,000 and two 10,000 kilowatt units. It is estimated that the new installation will be completed in October, 1920, supplementing and finally displacing the present mixed machinery obtained from America, Great Britain, and Germany. At present the plant is driven by 12 Diesel engines with a total of 2,558 horsepower. On January 1, 1920, it was supplying current to 8,000 consumers in and around Canton.

Electrical Sundries

There is increasing demand in Canton for electrical sundries, the principal item being fans and accessories. In 1919 the value of electric fans imported was $55,478, as compared with $51,863 in 1918. Fans imported in 1913 are not given as a separate item in the customs returns, but the value of electrical materials imported during that year was $72,163. In 1919 the value of electrical materials imported, exclusive of fans and equipment for power plants, was $335,273 as compared with $205,824 for 1918. The value of power-plant equipment imported into Canton in 1919 was $433,882 as against nothing in 1918. There is also a demand for small electric generating sets of about 2 kilowatts, for use in government offices, homes of wealthy Chinese, and a few factories.

There is a fairly good and growing market in this district for marine motors of 4 to 35 horsepower for use in passenger launches. Simplicity of construction and ease of operation are demanded by purchasers. American motors have become very popular during the past few years.

Machinery and Machine Tools

Manufacturing is in its infancy in this district and though there are a few factories of various kinds using imported, power-driven machinery, their output is negligible as compared with the goods manufactured by hand and by hand-driven machinery, because human labor is one of the cheapest things offered for sale on the local market. The manager of a peanut mill, which has steam-driven rolls for grinding the nuts and hand-driven "drop-hammer" mills for grinding the cakes, stated that steam power in 1917 was no cheaper than man power, but that he preferred it because it necessitated the presence of fewer employees.

However, there are hopeful indications of an increasing market here for machinery. A modern flour mill, equipped throughout with American machinery, is being constructed by an American firm at Canton, the cost of the completed plant to be in the neighborhood of $250,000. Motive power is to be supplied by an internal combustion engine, and the mill will have an output capacity of 150 barrels daily. The government arsenal, the shops maintained by the railways in this district, as well as other fairly large machine shops at Canton, numbering from 16 to 20, are considerable users of machine tools and tool steel.

Increasing Use of Automobiles

The increasing use of automobiles in Canton is indicated by an order just issued by the Canton municipality requiring chauffeurs and owners of cars to apply for certificates and licenses on or before July 31, 1920. No registration has heretofore been required. Canton has at present about 20 miles of roadway suitable for automobile traffic. This mileage is being increased by broadening existing streets and constructing new roadway over the base of the city wall which is being demolished. There are now in Canton about 45 automobiles, principally of American manufacture.

Eléctric Plants in Java

WE hear that the large water-driven electric plant near Lake Tes (in the Residency of Bengkoelen), supplying the necessary current to the government gold mines at Tambang Sawah, is in full swing, and up till now has given every satisfaction, says *The Dutch East Indian Archipelago.*

It may prove interesting here to give a few details concerning this great work that has cost about 1½ million guilders.

Many were the difficulties encountered, and which seem to cause no astonishment, considering that the work was begun in war-time, in an isolated part of the country, in a mountain-land difficult of access, and where everything had to be brought down to the coast in launches, and unloaded in a rough sea.

From Lake Tes, into which the Ketahun river flows, and which takes more than an hour to reach by boat, a canal nearly 1,700 metres long had to be dug, and waterworks erected in order to regulate the water which runs freely from the lake through the canal at the rate of ten metres a second.

Next came the laying of a covered pipe conduit of 580 metres long and 1.40 in diameter, the pipes of which had to be riveted on the spot.

At one end of the conduit is the plant, which is provided with Swiss water turbines and American generators, and here the water used by the plant is carried away by the Ketahun which flows into the sea on the south-west coast of Sumatra.

A high-tension conduit on wooden poles carries the generated current 26 K.M. on to Redjang Lebong, which it also supplies with electric-driving power, while at Muara Anam, the capital of the above-mentioned territory, there is a branch station for carrying on the current another 8 K.M. to the government territory of Tambang Sawah, were gold and silver are to be found.

Again, interesting details have come to hand concerning the supply of electricity to the Batavia and Preanger districts.

In the first place we heard that the steam-driven plant near the Tjihapit river, and slightly to the east of the city, is so far ready, that last month a beginning could be made after the engines were fixed. Barring disappointments, then, this 400 H.P. plant should be in full swing in about three months.

The current is destined for wireless and as a reserve for the local electric works the old water-driven plant at Dago having run short long ago. Once the Tjihapit plant which was begun last year starts work perhaps the many demands for electric light in the city may be partly supplied.

A water-driven plant, with a capacity of 3,000 H.P. is also being erected at Pengalengan, on the Tjisarua river, and nothing will be left undone that may hinder the work being completed by the end of June. The energy to be supplied by this plant is destined for all the mountain-districts around Bandoeng.

The plant draws its power from a waterfall in the Tjisarua and uses as a reserve, a large lake, whose enormous water supply of at first 13 and later on 20 million cubic metres can be drawn upon in the dry season to the extent of 13 and later on to 20 million cubic metres. It will be necessary, however, to make a tunnel about 3 K.M. long.

At Dago, too, a water-driven plant is being built, and a two-mile tunnel started, which will probably take another year and a half to complete.

We may also count upon obtaining some power from Telefunken plant at Dajeuh Kolot, which will be ready in a few months.

Yet another water-driven plant is going to be erected in the mountains round about Bandoeng, on the Tjisangkuj river. This is considered to be a gigantic piece of labor.

It is also well-known that near Tjibadak on the Tjitati in the Sukabumi district and 20 K.M. to the west of Buitenzorg, large water-driven plants are being built, which will take some years to complete. Their object is the electrifying of the Buitenzorg-Batavia-Tandjong Priok railway, the supply of power to the Batavia circular tramway, the illumination of Weltevreden and Priok, and the supply of energy to several engineering concerns in these places.

If, however, as is most probable, there should be any surplus, then Buitenzorg and Sukabumi can also be supplied with electricity.

An Enormous Service

IN a circular to their stockholders the Irving National Bank inform that, during the extraordinary year just ended, the total amount of business cleared through the Irving for its customers and for its own account was more than thirty-three billions of dollars. Exceeding by one-third the present national debt, this total suggests how great an economic service is rendered by commercial banks in collecting and safeguarding the productive capital of the country, and in expediting the operations of trade and industry on which we all depend for employment, for sustenance and comfort and for that intangible thing, made up of individual earnings and well being, which we know as national prosperity.

The effect on commerce as a result of silver fluctuation is commented upon. Adverse trade conditions in China, where silver is the standard of value, are attributed to the fall in the price of the white metal. Those interested are informed that the heavy drop in the value of silk, tea and other oriental goods was serious in itself, but when Chinese sellers came to convert into silver their drafts on foreign buyers, the market was again disadvantageous. The situation was likewise difficult for the Chinese importer, who saw the value of his payment-medium steadily declining. In addition, certain foreign manufacturing countries, notably Great Britain, misjudged conditions, stocked up their oriental warehouses with European or American goods and the twenty-three foreign banks in China accumulated large stocks of silver in Shanghai, but there has been an unusual absorption of silver in the hinterland. The United States sent $61,347,610 worth of silver to China in 1920. At present Chinese trade is almost at a standstill and famine claims more victims than the recent war.

Government Coal Mining in the Dutch East Indies

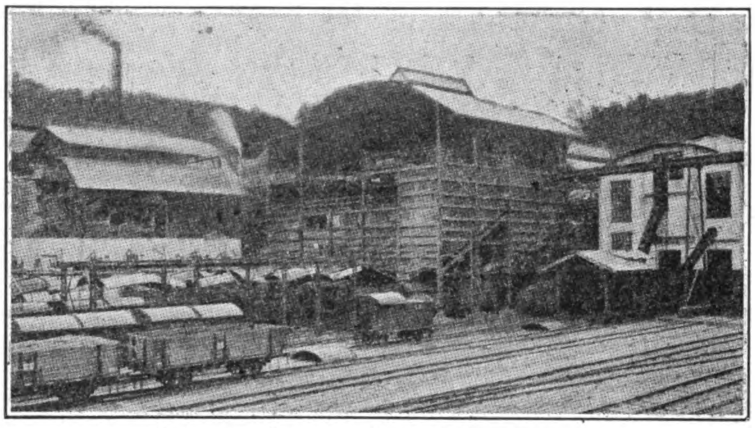
THE growth of steam navigation as a means of transport in the waters of the East Indian Archipelago has been a large factor in initiating the working of coal fields in the Dutch East Indies.

In 1846 the first government mine was sunk at Martapoera (Borneo) which, however, did not prove a success. In 1849, in the neighborhood of the above mine, the colliery of Oranje-Nassau was opened which, in a comparatively short time, was able, not only to supply the whole navy, but also to sell to private parties. Shortly afterwards another mine called *"Delft"* was opened by the government. Both these mines were, however, destroyed during the Borneo rising in 1858. Although the Oranje-Nassau colliery, resumed work for a short time, it never regained its former prosperity and in 1887 it was definitely closed.

At the present time two collieries in the Dutch East Indies, the Ombilin mines and the mines at Poeloe Laut, are worked by the government.

Ombilin Mines.—The Ombilin mines are situated near Sawah Loento in the highlands above Padang (Sumatra West Coast), a district which is deservedly famous for the beauty of its scenery. The coal-field was discovered in 1868, but mining did not begin until 1892.

For the transport of coal, a railway 156 K.M. in length has been constructed. Owing to the mountainous nature of the country parts of the track are on the cogwheel system.



Screening House at the Ombilin Collieries

The field extends for ten kilometres and has a breadth of nine kilometres. The thickness of the seams varies considerably, but is usually very great, some seams being as much as twenty-three metres. The method of working has, until now, been entirely by means of adits, and all modern appliances have been used. The mines are estimated to contain about 200,000,000 metric tons of coal, from which quantity about 5,320,473 tons were extracted from 1892 to 1914.

The coal burns easily with a large clear flame, and only small quantities of ash and residue remain.

The greater part of the production is sold to private buyers, who in 1913 accounted for 80 per cent. of the total output, and in 1914, 76 per cent. of the total output. The remainder is used chiefly to supply government needs.

The coal for private buyers is either delivered at Emmahaven as bunker coal or shipped to other places for the purpose of supplying steamers. In 1914 coal was shipped to Tandjong Priok, Singapore, Soerabaia and Makassar. In the same year the demand for Ombilin coals exceeded that of former years and the supply was unable to meet it. Emmahaven is growing in importance as a coaling station owing to the extension of the fleets of the steamship companies *"Netherland"* and *"Rotterdam Lloyd."*

In 1914 the output was larger than in former years. This was due to the fact that the outbreak of war caused all external work of preparation to be abandoned and the actual working of the coal could be carried on with greater activity.

The laborers are chiefly recruited from the convict stations and are natives, or those holding the same rights, and who are undergoing penal servitude for crime. At the end of 1914 the number of such laborers was 3,223, out of a total of 6,969. When compared with contract or free labor, the practice of employing convict labor presents many difficulties because the criminals are continually being substituted and trained, the same amount of work therefore cannot be extracted from them as from other laborers. For the most part good results have been obtained by making contracts with criminals who, on account of good conduct, have been released.

The condition of health among the convicts is usually not so good as among free laborers, since they are the more susceptible to disease. The death rate from sickness was 0.78 per cent. with the contract laborers and 3.67 per cent. with the convicts. In 1914 2.65 per cent. died as the result of accidents; in 1913 3.59 per cent.

The laborers' quarters were extended in 1914 and four new erections each, with an accommodation for an hundred families were built, besides six houses, each holding sixteen persons, of the last named type forty more will be built later.

The supply of drinking-water was also greatly improved by the construction of a new reservior.

As in 1913 no work was carried on at the coal brick factory since there was a sufficient demand for fine sifted coal.

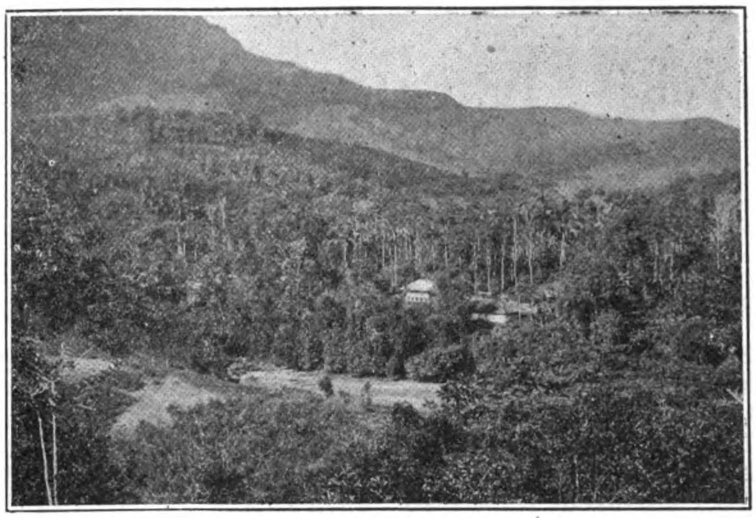
Good results have not so far been obtained from trials made with Ombilin coal for heating Yarrow boilers on warships, although experiments are being made with coal bricks.

The following figures relate to the progress of the government coal-mining industry:—

	Production in tons of 1,000 K.G.	Book value of the enterprise in guilders	Receipts	Working expenses	Net profits after deducting share paid to the Sumatra Railway
1910 ...	387,522	3,139,931	3,520,240	3,142,145	378,094
1911 ...	406,395	3,094,027	3,609,018	3,250,924	358,094
1912 ...	407,452	3,231,704	3,614,208	3,276,068	338,140
1913 ...	411,071	3,733,090	3,678,138	3,309,051	369,087
1914 ...	443,141	4,054,604	4,104,689	3,604,954	338,909

Poeloe Laut.—Since October 1913 a colliery has been worked in the small island of Poeloe Laut, lying off the south-east coast of Borneo.

Mention was first made of coal strata in that island in 1850. Some years afterwards the coal was worked on a small scale by the natives. In 1903 a private mining company was formed to work this mine but it was taken over by the government in 1913. In the same year the rest of the island was reserved by the government for geological research and the working of other mines.



Java Mountain Scenery

The Main Street of a Village

The centre of the mining industry is at Stagen which has a port on the coast, and with which it is connected by a railway five kilometres long.

In order to take full advantage of the profits that can be derived from the industry, it has been deemed advisable to extend the work. The preliminary work of extension and the work of setting up of an electric power-house to increase the working capacity of the industry, had to cease during 1914.

The island is on the direct steamship lines between South Africa, Australia, Java, Macassar, China and Japan and is, in consequence, situated very favorably for the sale of the mineral. The sale of bunker coal during the later months of 1914 fell off very considerably because the German Steamship Companies N. D. L. and D. A. D. G. who were the chief buyers, harbored their steamers.

In 1914 201 ships sailing under the following flags called at Stagen for coal:

Dutch...	148
German	25
British	18
Japanese	8
Scandinavian	2

In 1914 110,238 tons of coal were shipped, 76.55 per cent. of which was delivered to private concerns and 23.45 per cent. to government services or public works.

The mining is chiefly done by Javanese contract labor, the average strength of which in 1914 was 1952 men. An average of 4.92 per cent. were treated in the hospitals; the death-rate was 1.84 per cent. (of which 0.92 per cent. from disease).

The production of coal from 1907 to October 1913 amounted to 902,295 tons. In 1913 the production was 126,885 tons and in 1914 128,505 tons.

Malayan Tin Production

FIFTEEN years ago Malaya produced over 60 per cent. of the world's tin; to-day the figure stands at less than 40 per cent. In 1903 Bolivia was credited with under 10,000 tons; to-day that country is the second largest tin-producing country of the world and unofficial estimates give it 20 to 25 per cent. of the total output. Nigeria, whose output 10 years ago was practically negligible, is returned in official statistics as producing in 1917 nearly 10,000 tons. The Malayan production in 1919 is given as 36,867 tons compared with 50,000 tons five years before. Yet here is a rather curious circumstance. Taking official statistics for the years 1903, 1904, and 1905, and those 12 years later it is noted that the total outturn of ore has on the whole increased. The loss on Negri Sembilan output is more than offset by the gain in Pahang, while the loss on Selangor is easily cared for by the gain in Perak. The deduction is that although the percentage comparison of Malayan output with the world's total has fallen owing to greater production elsewhere, the actual outturn has considerably increased.

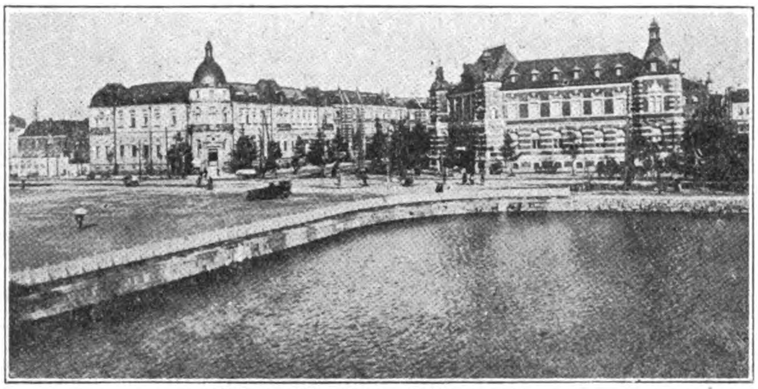
Although production has been affected by cumulative years of war restrictions and hindrances and present figures do not indicate the real strength of Malayan ore production, there is sufficient ground for urging that the industry should be taken more carefully into consideration. At present there is one large and well-known American mining company located in the Federated Malay States. This firm is importing large quantities of material and sending out capable men as prospectors. Realizing that they must do more than mere surface mining to obtain results in the future and perhaps stimulated by the advent of the American company, already referred to, many of the local mining corporations are taking a keener interest in scientific mining and are preparing

Tin Mining in Malay States

to go ahead on a much more thorough principle. This should present an opportunity to American firms engaged in the manufacture of tin-mining machinery.

The Tokyo Stock Exchange

THE exchange system of Japan dates from the beginning of the eighteenth century, when an organized market for rice, the only important staple in those days, came into existence in Osaka, says Yashinari Kaiwi, manager of the Tokyo exchange, in the magazine of Wall Street. In course of time similar institutions sprang up in various parts of the country. The transaction on these exchanges was exclusively limited at first to rice, but later on its scope was extended to include such staples as oil and gold and silver.



Tokyo Chamber of Commerce

The first stock exchange established in Japan was that in Tokyo, and it was established not earlier than May, 1879, proving how backward and undeveloped at that time our economic conditions were. The Tokyo exchange was soon followed by a similar institution in Osaka. At present, there are nine exchanges devoted to dealings in securities, either exclusively or in combination with other lines of commodities, but of these the two oldest ones naturally stand foremost.

The exchange in Japan differs from that in England or America as to official control. The Japanese laws are based more on the Continental system and their underlying principle leans in consequence towards interference. The exchanges, whether dealing in commodities or in stocks and shares, are equally placed under the same legislative measures and alike subject to the strict control and supervision of the minister of state for agriculture and commerce. He is vested with the authority to supervise the working of the exchanges, to prevent or remove any abuses and irregularities that may arise in connection with it and also to issue instructions and regulations for regulating the business of the exchange.

The exchanges act now in force was first introduced in March, 1893, while the rules of operation were promulgated in July, 1914. These principal and supplementary provisions remain in force with some alterations effected from time to time.

Any flourishing business centre may establish an exchange for dealings in one or more lines of business, subject of course to the sanction of the government. Only one exchange is permissible within one district for one line of business. The charter is good for a period of ten years, renewable on expiration.

One of the most striking features peculiar to the Japanese system is that the exchange may be organized as a limited liability company with its capital stock divided into shares. The law recognizes the association form after the western model, but all the exchanges now in existence in Japan are on the limited liability plan. One thing that is most characteristic of this form of exchange is that *ipso jure* it stands as security, to the full extent of its subscribed capital, for the fulfilment of all the contracts duly entered into on the floor. This being the case, the exchange, in all cases of default, is held responsible to indemnify the loss resulting therefrom. Either party to a contract is thus made entirely free from taking any heed of the financial standing or integrity of the other party with whom he is dealing, and what is more, the buying as well as the selling parties are in no way annoyed by the possible insolvency of their respective contractees, pending the term of the contract.

Exchange Gets Commission

On the other hand, the corporate exchanges are entitled to charge commissions on all dealings transacted on the floor, both upon the buying as well as the selling parties, at the rates sanctioned by the competent authorities. The proceeds from this source constitute the main resource from which the exchange declares dividends in much the same way as is the case with the ordinary business corporations.

Now the Tokyo Stock Exchange is a corporation with a capital stock of twenty million yen, divided into four hundred thousand shares of fity yen each. The administration of the exchange is vested in a board of directors composed of five members and presided over by a superintendent. Besides, there are three inspectors whose duty it is to audit the semi-annual accounts made out by the directors, to be submitted to the shareholdrers' meeting for approval. All these officers hold office for term of two years, and are elected, subject to the government's sanction, from among the shareholders of the company, of not less than fifty shares.

From the peculiar nature of the exchange in Japan, no contract shall be deemed legitimate, and therefore, binding, unless both parties to it are legally registered brokers. It follows, therefore, that all bargains, whether effected by the brokers for their own account, or of that of their principals, must alike be booked in the name of the brokers concerned.

Brokers are Licensed

Government license is required for a broker, and he must be a subject of the empire, and of full age. Every broker is required by law to deposit with the exchange "fidelity money," the sum of which differs according to the exchanges. In Tokyo it is fifty thousand yen. When a broker is elected an officer of the exchange or is newly installed as a broker of any other exchange, his connection with the exchange to which he has belonged ceases.

There are two kinds of transactions recognized on the floor, namely, time-bargains and forward bargains. Forward bargains are those in which the selling party undertakes to deliver the other party the specified amount of securities, at the price agreed upon, within fifteen days including the day of contract. On the other hand, the time-bargain is a sort of transaction for future account, binding both parties to effect delivery upon the date specified by the exchange for the purpose. In the Tokyo Stock Exchange, the account invariably falls due at the end of the month, ordinarily on the last day but one. The contract for account, however, being allowed to run pending three accounts, a bargain can be contracted for, in the course of a certain month, for the settlement at the end of either the current month, the following month or the month ensuing thereafter.

The unit of transaction in the dealings for account is 10 shares or $1,000 par value of public loan bonds or any other debentures, any odd lots other than these not being marketable on the floor. With regard to forward bargains, there is practically no standard unit, but as a matter of course, odd quantities are less easy to deal in. In all cases bids and offers to buy or sell shall be made for 1 share or for Y.100 or the minimum par value of the bond. In reality, however, few bargains are now transacted for account on the Tokyo exchange as regards the latter.

The manner in which time-bargains are consummated and contracts for account become binding, is most characteristic; in substance, it is as follows:

Two Sessions Daily

Usually there are two sessions on an ordinary business day, each session having two rounds of calls for all the securities upon the list. The call is made according to the order of bonds and shares as arranged by the exchange, the transactions for the three different accounts being done separately and consecutively. Buying and selling on the floor is facilitated by the aid of signs and signals peculiar to the exchange, and all the bargains done are quickly taken note of as soon as they are effected, by some clerks of the exchange specially installed for the purpose. Bids and offers are allowed to be made and accepted until what is deemed an equitable and normal price is arrived at. Then the secretary upon the rostrum announces by a clap of blocks that no further transactions are to be registered. Upon this, all the bargains entered in the market memorandum become binding simultaneously at the single and uniform price officially declared by the exchange, and irrespective of the original prices at which the respective contracts were entered into. Therefore the jobbers should be keenly on the alert to do or undo all the sales, as the circumstance may be, prior to the official announcement of the quotation. Then each broker's sales and purchases are set off and made null and void so far as they match with each other, unless he sends in a declaration to the contrary in time.

One remarkable feature in the time-bargains is that pending the term of contract the securities bought or sold for account can be freely re-sold or re-purchased, without the knowledge of the other party. The party effecting such a re-sale or re-purchase shall be entirely released of the fulfilment of the contract, upon payment or receipt of the difference between the original and the re-sale or re-purchase price. The duty to effect delivery will devolve upon the party with whom he has stipulated such a bargain. It may be repeated here that, in Japan, the exchange guarantees the performance of all the contracts duly entered into on the floor ; and the custom above referred to doubtless owes its origin to this guarantee system. Of course the final object of time-bargains is the same as the forward bargain so far as regards the bona fide delivery of securities, the only difference being that for the former a longer interval of time is allowed to stand between the conclusion of the contract and its settlement.

There being on an ordinary business day two sessions, each with two rounds of calls for all the securities upon the list, dealings in any one kind of stocks transacted on any one day may vary in prices,but in registering these bargains on the record of the exchange, they all are reduced, for convenience's sake, to a single price specially quoted for the purpose, the exchange paying to, or receiving from the parties concerned, the differences between the respective contract and the record price. The arrangement for quoting every security twice in a session is thought to allow more opportunities for dealing.

Margin Requirements

Quite contrary to the western custom, the form of time-bargains on the Japanese exchange is that of trading on margins. A margin differs according to the nature of the security and the then prevailing situation of the market. The rate generally ranges from somewhere about 4 or 5 to 15 per cent. of the market prices. Not infrequently, in the event of wider fluctuations of the prices, deposit of extra margins by the losing parties is inisted upon by the exchange, in conformity with the provisions of the rules of the exchange. Monetary deposit may be substituted by the deposit of approved securities.

All deliveries and payments should be made through the medium of the exchange ; otherwise they are not regarded as legitimate. Clearing facilities are not yet made use of in Japan in connection with the settlement of the transactions upon the floor although deliveries are simplified by the establishment of the uniform delivery prices.

Shares and debentures are placed upon the list after the business condition and financial standing of the applying company are judged satisfactory, and in like manner, the exchange authorities may at any time suspend, at their own discretion, dealings in, or summarily cancel from, the list the securities of any corporation judged internally unsound, or when their dealings are regarded as perilous to the welfare of the exchange.

A New Book

IN so far as it affects the railways of China, their regulation and administration, Chin Chun Wang's book "Legislative Regulation of Railway Finance in England" will satisfy those students and other enquirers of railway methods and conditions. They will find in it a comprehensive study of "General Legislation on Railway Finance" ; "Legislative Supervision of Capitalization—(a) Share Capital" ; " Supervision of Railway Capitalization—(b) Loan Capital" ; "Control of the Borrowing Powers of Railway Companies" ; "Registration of Railway Securities" ; "Regulation of Stock Watering" ; "The Regulation of Railway Accounts" ; and "State Auditing and Inspection." Such a work deserves commendation not merely on its merits but also because it obviously is the result of serious study on the part of a Chinese gentleman whose acquisition of modernism did not gain impetus through inheritence. It is a matter of doubt whether such a work could have been better accomplished by an Anglo-Saxon whose lineage

Dr. C. C. WANG
Chinese Railway Expert

gives him an advantage in an understanding of the common sequence of modernism which the Oriental cannot hope to acquire until he has behind him years of familiarity with industrial development of the Western type. The author is better known to foreign sojourners in these parts as Dr. C. C. Wang, one time director of the Kin-han Railway and now councillor in the ministry of communications and second vice-president of the Chinese Eastern Railway. His experience in Chinese railway affairs makes of him an authority on such matters, and his book, which has just been published by The University of Illinois with which he has been associated in the past, being a sometime honorary fellow in economics there, proves him to be an authority on railroad matters other than Chinese. If it travels no further, and it is not difficult to believe that it will, the book should at least find resting place on the reading table of those interested in the development of China's railroads in so far as the arguments or studies contained therein can affect such.

Railways in India, 1919-20

DURING the year, in spite of the cessation of hostilities between the principal powers, little relief was experienced from the demands on Indian railways. The military concentration on the north-west frontier, labor unrest in Europe, and disturbances in India impeded the improvement and re-equipment of Indian railways that was hoped for and might otherwise have been expected.

Gross earnings showed an increase over the figures of the preceding year of nearly 3 crores of rupees. On the other hand, the percentage of working expenses to gross earnings increased considerably. This was partly due to the fact that the conditions of service of railway servants were improved by material increases in the scales of wages and salaries; and partly due to the very high prices demanded for materials, essential both for maintenance purposes and for raising the standard of efficiency that had been relaxed during the years of the war. This process of improvement necessarily tends to increase working expenses, and it will no doubt take time to reduce such costs to normal proportions, owing to the amount of lost ground that has to be recovered and to the fact that the available supplies of railway material throughout the world are not at present equal to the demand.

Capital

The capital outlay incurred by the government in the purchase and construction of its railways, including the liability which remains to be discharged by means of annuity and sinking fund payments, amounted at the end of 1919-20 to £380,768,116.

The outlay incurred during 1919-20 was £12,054,706, distributed as follows:

	Rs.
Open Line Works (including Suspense) ...	13,31,01,592
Rolling-stock	4,56,36,000
New Lines	20,83,000
Total	18,08,20,592
Equivalent at Rs. 15=£1 to	£12,054,706

During the year under review, the actual capital expenditure fell short of the sanctioned grant for the year by Rs. 8.48 crores. This lapse was attributable mainly to the credit to the capital account of gain by exchange on sterling outlay in England and the difficulties attendant on the supply of railway materials from England.

The capital expenditure provided for in the budget for 1920-21 is Rs. 2,198 lakhs (net). This is again a record figure and is partly accounted for by the heavy liability carried over from the previous year owing to the failure of the supply of English materials in 1919-20. The program has been designed to provide, as far as possible, for the improvement of traffic facilities, which have been unavoidably deferred during the war and are now urgently required to meet a rapidly expanding trade. It has been possible, therefore, only to spare a small amount for lines in progress and new construction. Provision has, however, been made for the replacement of some of the lines which were dismantled during the war.

The actual capital outlay on railways which have been financed by private enterprise, such as branch lines promoted by companies, district board lines, Indian state lines, etc., amounted at the end of 1919-20 to Rs. 70,27,66,000. The capital expenditure on such lines during the year was as follows:

	Rs.
Branch Line Companies' Railways	28,32,000
District Board Lines	22,000
Indian State Lines	49,32,000
Total	77,86,000

Traffic Working

The year under review, generally speaking, was one of relaxation and withdrawal of the various forms of traffic control which had been introduced to cope with the unprecedented problems connected with the movement of public and military traffic as they arose during the period of the war.

In September, 1919, the controller of traffic, whose continuance in office was necessitated by the Afghan war and other difficualties which followed in its train, was relieved of the duties he had assumed in June, 1917, under the orders of the railway board. The priority certificate system, which had been introduced in June, 1918, to enable railways to discriminate between the more urgent classes of preferential traffic, was abolished, except in relation to the north-west frontier, by the end of the year. Owing to the volume of military traffic to and from the north-west frontier and Baluchistan and the small margin left for the movement of public traffic, it was found necessary to retain the assistance of such certificates to ensure that the available margin was utilized for essential traffic such as food grains.

The concentration on the north-west frontier to meet the disturbed conditions on the Afghan border for a time heavily taxed the resources of the North Western Railway and these had, on occasions, to be supplemented by other railways. Even after the declaration of peace, conditions were very little improved owing to the risings among the frontier tribes. Thus it was found necessary to retain, on the narrow gauge lines along the frontier, the engines and rolling-stock commandeered from other sources, and to employ also a considerable portion of the rolling-stock of the North Western Railway for the purpose of transporting troops and military stores as required from time to time.

Victoria Terminus and Railway Offices, Bombay

The appointment of the coal controller terminated in April, 1919, the necessary portion of his duties being transferred to the deputy coal controller under the new designation of "Coal Transportation Officer, Railway Board." The problem presented by the transport of coal, a matter of vital interest to the industries and railways of the country, continued to play, however, an important part in the congested conditions obtaining on the railways of India. It was abundantly clear that the immediate remedy for improving matters lay in the judicious handling of this section of traffic, on the movement of which more than half of the available wagon supply in the country was at one time engaged.

The absence of shipping in Indian waters greatly increased the difficulties of the problem, because all coal required at the ports of western and southern India, which formerly was sent by the sea route from Calcutta, had been diverted to the all-railroute across India. The cargo and bunker coal alone shipped from the Ports of Bombay and Karachi amounted to 468,603 tons during the year or an average of over 2,500 wagons, permanently diverted from the carriage of public coal and merchandise to the provision of this traffic in coal which did not benefit the industries or railways of India. When the other ports of India, such as Madras, are taken into consideration the total number of wagons thus locked up is greatly increased. Towards the end of the year under review, the position became so acute that the railway board were obliged to urge proposals for the early re-diversion to the normal route, viz., the rail-*cum*-sea route via Calcutta, of all coal required for the royal Indian marine, railway and bunkering purposes. In this way an endeavor was made to release a greater number of wagons for the ordinary merchandise traffic, which had begun to increase steadily with the revival of internal trade.

Another important feature was the decision arrived at in January, 1920, to raise the rate for the carriage of public coal from the coalfields in Bengal and Bihar and Orissa by approximately 5 per cent. for long distance up to 7½ per cent. for short distance traffic. The existing rates were considered to be sufficiently low to warrant such an enhancement, particularly in view of the abnormal rise in the price of materials and a largely increased wages bill which was resulting in a heavy increase in the working costs on railways.

Mileage

During the year, 1919-20, 119.34 miles of railway were opened to traffic bringing the total mileage open (after allowing for dismantlements, and minor corrections due to realignments, etc.) up to 36,735 miles. The additional mileage was made up as follows :

	5' 6" gauge, miles	3' 3⅜" gauge, miles	2' 6" gauge, miles	2' 0" gauge, miles	Total miles
State lines worked by the State...	...	6.25	...	...	6.25
Branch line Companies' railways under guarantee terms, worked by the main line	...	50.81	...	...	50.81
Branch line Companies' railways under rebate terms, worked by the main line	13.98	...	...	...	13.98
Unassisted Companies' lines ...	...	...	20.50	...	20.50
District Board lines	...	22.94	...	...	22.94
Indian State lines worked by Indian States	...	4.86	...	...	4.86
Total	13.98	84.86	20.50	...	119.34

The total mileage under construction, or sanctioned for construction, at the close of the year was :

—	5' 6" gauge, miles	3' 3⅜" gauge, miles	2' 6" gauge, miles	2' 0" gauge, miles	Total miles
State lines worked by the State...	185.00	...	22.00	...	207.00
State lines worked by Companies	480.40	117.37	8.43	...	606.20
Branch lines Companies' railways under guarantee terms, worked by the Branch line Companies...	...	...	27.00	...	27.00
Branch lines Companies' railways under guarantee terms, worked by the main line	...	23.30	...	...	23.30
Branch line Companies' railways under rebate terms, worked by the main line	...	...	92.94	...	92.94
District Board lines	...	68.57	...	...	68.57
Indian State lines worked by Indian States	...	442.20	46.09	56.88	545.17
Indian State lines worked by the main line	...	153.81	98.45	...	252.26
Total	665.40	805.25	294.91	56.88	1,822.44

The rate of progress on most of the new lines comprised in this statement was impeded by the difficulties still experienced in obtaining supplies of the essential materials for their construction.

Fuel

In 1919, the coal mined in India amounted to 22,628,037 tons against 20,722,493 tons in 1918. Despatches of coal by the East Indian and Bengal-Nagpur Railways from the coal-fields of Bengal and Bihar and Orissa exceeded those of the previous year by 16,967 tons.

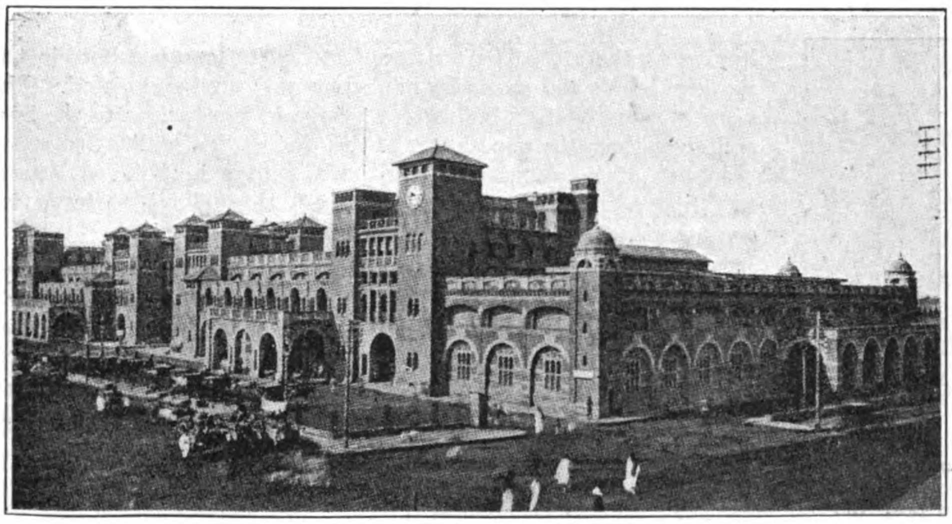
The total quantity of coal despatched from the main coalfields of India is as follows :

	Tons
Bengal, Bihar and Orissa collieries	15,524,397
Singareni	543,386
Pench Valley	257,895
Umaria	157,151
Total despatched by rail	16,482,829

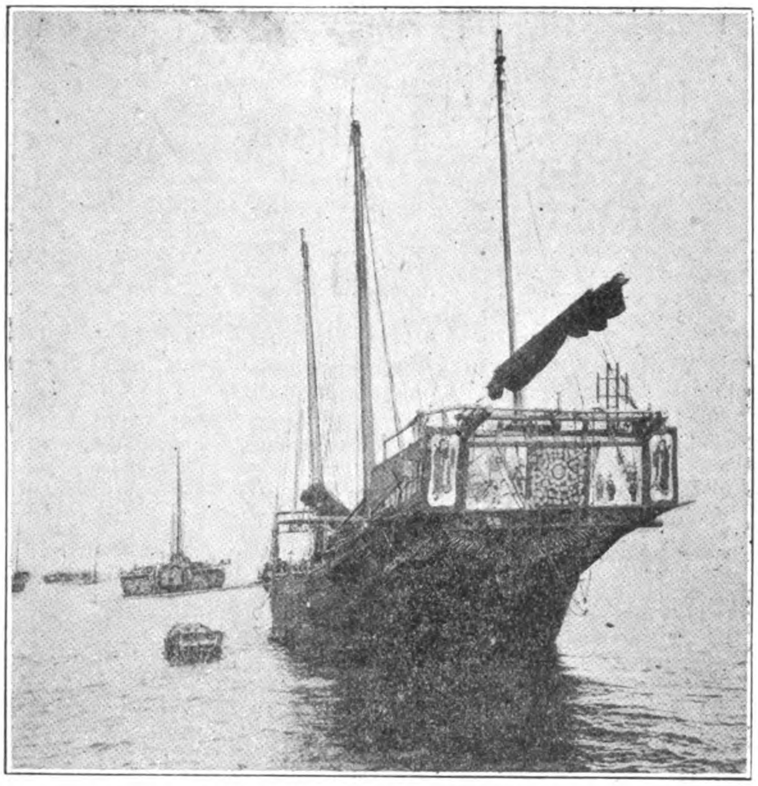
Including bunker coal, shipments from the port of Calcutta to Indian and Foreign ports in 1919-20 amounted to 1,817,950 tons as compared with 1,632,916 tons in 1918-19 and 901,125 tons in 1917-18 and 1,999,657 tons in 1916-17. Cargo and bunker coal shipped from the port of Bombay amounted to 304,851 tons and from the port of Karachi to 163,752 tons during 1919-20.

The question of utilizing, for railway purposes, certain classes of inferior coals available in India is engaging attention. Experiments with pulverised coal have been continued by the Great Indian Peninsula Railway during the year. The results attained so far, however, do not at present justify the formulation of any definite conclusions.

The regular use of oil-fuel for locomotives on certain sections of the Great Indian Peninsula and of the North Western Railways continues. At the end of the year under review, there were on the North Western Railway 129 engines burning oil-fuel and a shortage capacity of 19,300 tons of the same fuel on the Karachi district.



Howrah Station of the East Indian Railway



A Typical Sea-going Chinese Junk

China's Waterways*

By A. H. Hallam †

ONE often hears industrial China spoken of, but few people realize from a marine standpoint the vast possibilities that exist for the development of the thousands of miles of waterways that intersect this large continent and the facilities for trading that would exist by quicker and more efficient transport once these rivers and canals are opened up by the use of steam and motor-driven vessels.

The present method, with but few exceptions, is by the use of man power on shallow draft wooden boats averaging 60 feet long and 12 feet wide. Two long oars called "Ulohs" working on metal mushroom pins at the stern, one on each side, propel these vessels, each manned by four Chinese, male or female. They give these oars a peculiar twist in operation, which compares with the movements of a steam-driven propeller. Their speed under normal conditions is about 15 miles per day.

On the Grand Canal

At the busy manufacturing city of Wusieh, Kiangsu Province, China, the Grand Canal is constantly congested with sampans and junks so great is the traffic. This picture is a scene near the railway station. Published by courtesy of the U. S. Bureau of Foreign and Domestic Commerce

They also operate similar boats with a flat bottom, fitted with a stern wheel made entirely of wood, which is made to revolve by a number of Chinese stepping on wood blocks attached to the sides of the axle turning the wheel—on the treadmill principle.

This particular class of vessel is principally used on shallow draft rivers and canals, and many are noticed daily, wending their way from Ichang up the gorges to Chungking, a somewhat dangerous trip to make on account of the strong currents. The river between these two places is barely 90 yards wide, with very high mountains on either side. To give some idea as to the strong current here, it is interesting to note that it takes ten to twelve days to reach Chungking, but only two days to return from there to Ichang.

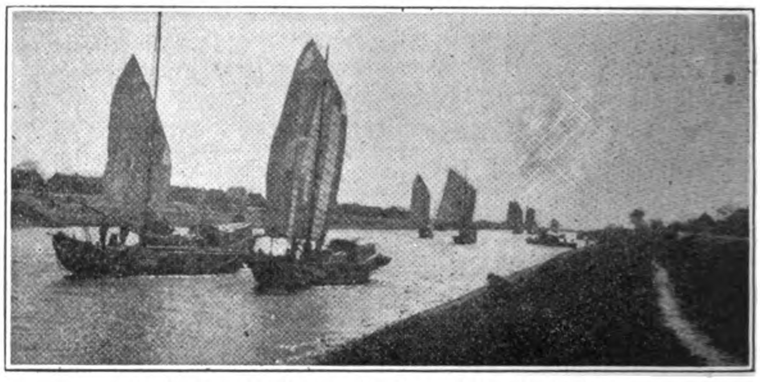
Recently steel shallow draft steamboats of the stern wheel type have been operated on this river with success, and doubtless as time goes on the old-fashioned boat will disappear.

In wooden boats no metal of any description is used in their manufacture, even the nails being of wood. Every boat built is constructed with watertight compartments down to the small "Sampans" carrying one or two passengers.

On the Yangtze-Kiang river, as far as Hankow, large commodious river steamers operate daily from Shanghai. They are somewhat similar in appearance to vessels used on the Hudson.

There is also a large coast service of small but well-equipped steamers owned and operated by foreign and Chinese companies.

The Chinese as sailors and navigators are good, although their navigating instruments are home-made and crude. They venture to sea on long voyages on their large sea-going wooden junks. These trips are sometimes two or three months in duration. Their large bamboo masts slant in the opposite direction to ours—that is, at a forward angle of about 30 degrees forward instead of having a rake aft. The sails are fastened to long bamboos in the shape of blinds and are easily hauled up or stowed and reefed. The stern of these boats is built up very high in comparison to the bow and gives them the appearance of the ancient "galeon." There are hundreds of thousands of these junks sailing in Chinese waters, and not a single metal nail is used throughout their entire construction.



A Fleet of Junks on the Grand Canal, China

Where this waterway is navigable it is always the scene of activity. Photo by U. S. Bureau of Foreign and Domestic Commerce.

Such a boat has a large population, at times running into three generations, as it is the custom in China for the children to care for their parents in their old age. Most of these people are born afloat and will die without ever knowing what it means to live on shore. While civilization has made such progress everywhere else, it touches China very slowly, and present customs, most of them, in many instances were in vogue 2,000 years ago.

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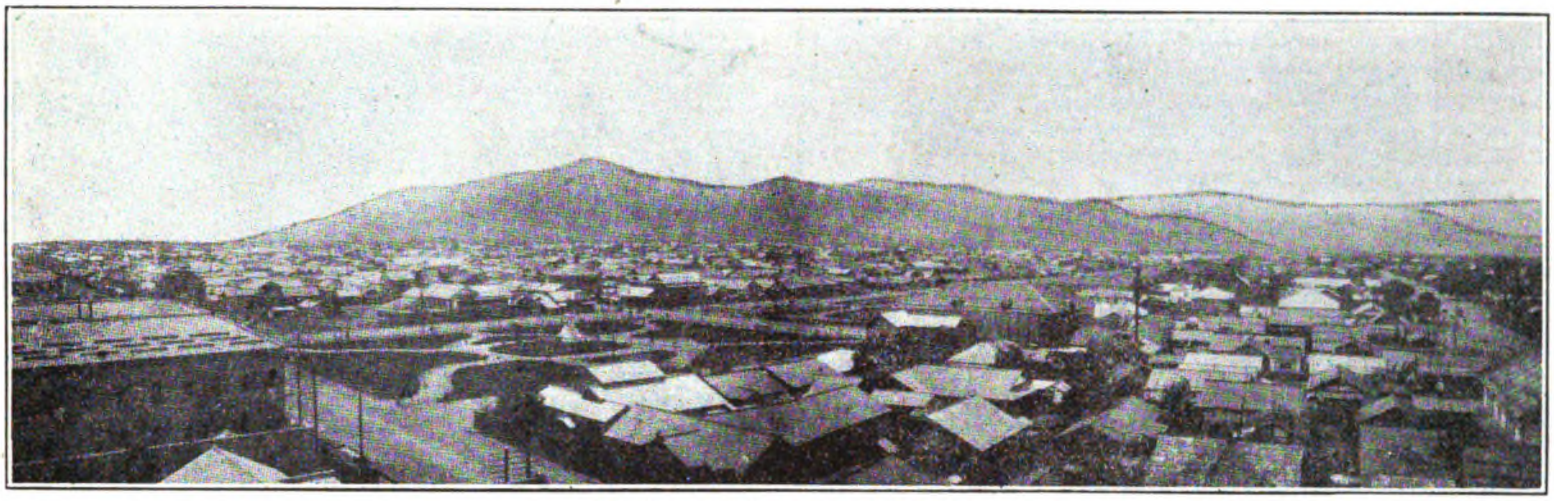
* From the *Compass*.

† General Manager of Vacuum Oil Company at Shanghai, China.

HOKKAIDO The Northland of Japan

By *Wellington D. Jones, University of Chicago*



CITY OF SAPPORO, HOKKAIDO

HOKKAIDO (Yezo), the northernmost of the four larger Japanese islands is of peculiar interest to geographers because it is so strikingly different from the rest of Japan. The Japan we commonly think of is a land of long, hot, rainy summers and mild, rainy winters, a land with rice and silk and tea as characteristic crops, a land with a dense population and a highly developed agriculture that utilizes to the utmost the cultivable area. In so far as Japan really counts for much in the world it is like this, but Hokkaido is different.

Topographic Similarities with the Main Island

In topography the 30,000 odd square miles of Hokkaido are much like the rest of Japan, with relatively much hill and mountain area and little lowland plain. The mountains are for the most part neither high nor rugged, and, though there are numerous fine volcanic cones, which add a striking element to the scenery, especially in the southwestern peninsula, much of the mountain area is non-volcanic. The highest mountain in the island is Nutapkaushpe, 7,691 feet above sea level. The most extensive plains are the lowlands of the Ishikari, Tokachi, Nemuro, Teshio and Kushiro. Of these the Ishikari Plain is by far the largest and most important. The coastal lowlands are narrow and of relatively little importance for cultivation. Most of the streams are swift and of practically no use for navigation except for small boats and rafts. The water power possibilities of some of these streams are considerable.

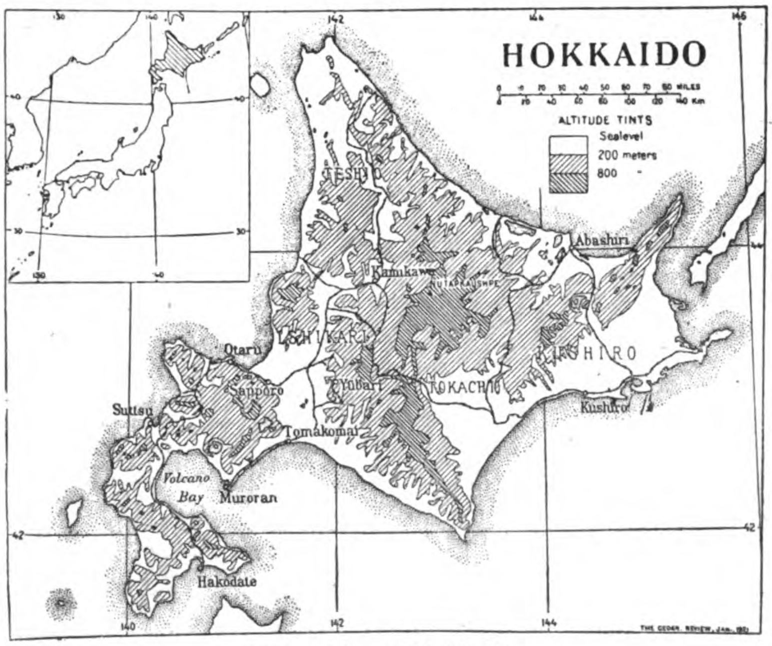
Contrasts Between Hokkaido and the Rest of Japan

In other respects than topography, Hokkaido presents a marked contrast to the rest of Japan. Its population is sparse, and agriculture is in its infancy. Much of its cultivable area is covered with virgin forest. And yet, though at present undeveloped and unimportant, the possibilities of Hokkaido are of real significance, for its area constitutes one-fifth that of all Japan, and its resources in proportion to area are not far inferior to those of other parts of that country.

The name Hokkaido, meaning "Northland," calls attention to that feature of the physical environment in which this island differs most markedly from the rest of the archipelago. The climate of the main island—excluding the northern portion—is similar to

Yubari Colliery

Dairy Farm at Tsukisappu



Relief Map of Hokkaido
(Scale 1: 5,200,000) with inset showing relation to the rest of Japan

that of the Carolinas, in the eastern part of the United States cotton belt, whereas the climate of Hokkaido is much like that of central Wisconsin or of New England. Perhaps the most striking expression of the difference is the comparative unimportance of the great food staple of the East. In place of rice, which occupies the largest acreage in the southern islands, peas and beans constitute the chief crop in Hokkaido. Potatoes come second, three-fifths of the Japanese crop being grown in the northern island, where conditions are highly suitable. Cereals other than rice—oats, barley, maize, buckwheat, and millet—which are an important feature of the agriculture of the southern island, are also of consequence in Hokkaido. But, whereas in the former they are grown as winter crops (except in the upland districts and except in the case of maize), in Hokkaido they are summer crops. The cooler summer climate of the northern island is again suggested in the growth of flax for fiber, a cultivation practically absent in other parts of Japan.

Of late years there has been much discussion about the possibilities of growing rice in Hokkaido. Until rather recently it was thought that rice would not mature in the short summers of the northern island. This idea was one of the causes of the reluctance of the Japanese to settle in Hokkaido and a partial explanation of the present sparse population there and the relatively undeveloped state of its resources. Within the last few years, however, it has been recognized that the interior lowlands enjoy warmer and longer summers than the coasts. In consequence there has been a rapid development of rice culture, particularly on the Ishikari Plain, so that at present there is a larger area in rice on the island than in any other cereal except oats. It seems improbable, however, that rice will become and remain the dominant crop in Hokkaido. A large part of the cultivable area of the island seems climatically unsuited to the crop, and, even in the sections where rice can be grown, other crops will probably prove more profitable, for the returns are smaller and less certain than farther south.

Status of Agriculture

Another striking difference between Hokkaido and the other parts of Japan lies in the relative importance of agriculture, a difference, however, that will tend gradually to disappear. At present not more than half of the arable land of Hokkaido is used, and large sections of potentially high-grade farm land still remain under the primeval forest. Just what proportion of the total area of the island can eventually be cultivated is not known; but, in view of the fact that the general character of the topography and the soil is much like that of the other Japanese islands, 15 per cent. is probably a safe estimate.

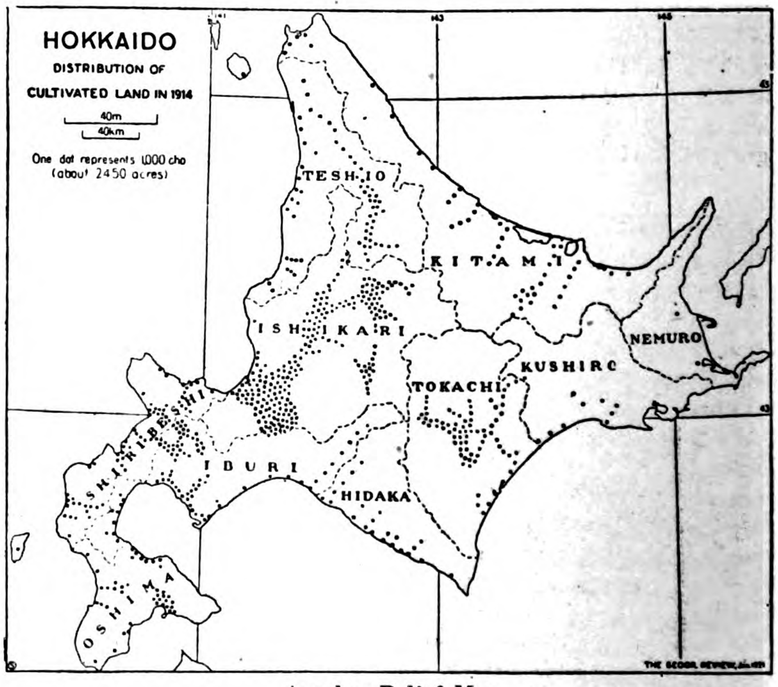
Cultivation in Hokkaido is much less intensive than in "Old Japan." The average size of farms in the north is 9½ acres, whereas in the southern islands it is 2½ acres. The presence in the fields of standing dead trees that have been killed by girdling, and of many stumps, also suggests the less intensive use of the land, as well as the recent date at which it was cleared for cultivation.

TABLE I—AREA AND VALUE OF IMPORTANT CROPS IN HOKKAIDO, 1917:

	AREA IN THOUSANDS OF CHO (cho=2.45 acres)	VALUE IN MILLIONS OF YEN (yen=approx. 50 cents)
Total cultivated area	746.5	—
Beans and peas	171.7	23.6
Potatoes	76.1	13.3
Rice	63.9	17.2
Oats (1914)	63.2	4.2
Naked barley and barley (1918) ...	31.3	6.0
Millet	20.9	2.4
Maize	20.6	2.6
Flax	19.7	3.5
Buckwheat	18.4	1.5
Rapeseed	14.0	2.7
Wheat (1918)	10.7	2.0
Squashes	6.7	1.9
Radishes	5.5	1.4
Cabbages	2.9	1.0

From *Thirty-fourth Statistical Report of the Department of Agriculture and Commerce*, Japan.

The newness of the agricultural economy of Hokkaido is again reflected in the relatively greater importance of stock raising. In the old and densely settled parts of Japan there are few of the larger animals, and these are kept mostly for draft purposes. In Hokkaido the number of horses in proportion to the human population is comparatively large, and the raising of cattle for meat and dairy products has made a good start. In the sparsely populated northland there is a great need of draft animals to supplement human labor, while there is plenty of land available for grazing. Furthermore, the climate of Hokkaido is more favorable to the growth of forage plants than that of the southern islands, and some credit may be due also to the stimulus of American agricultural experts who were employed a generation ago to help in the de-



Another Relief Map
Showing Area of Cultivated Land

Log Run, Hokkaido

velopment of the resources of the island. Yet, in spite of such favorable conditions, the number of cattle, while relatively superior to that of Old Japan, is very small. In the state of Wisconsin, where geographical conditions are much like those in Hokkaido, there was in 1914 an average of somewhat more than one head of cattle per person, whereas in Hokkaido there was only about one head of cattle per 113 persons. The Japanese are not accustomed to eat meat and dairy products, and, until a better market for such products is developed either in Japan or in China, the number of cattle in Hokkaido probably will not nearly approach the number that the island could support.

The Fisheries

The first industry to develop in Hokkaido, and long the chief one, was fishing. The seas surrounding the island are rich in fish, and fishermen from Honshiu early began to voyage northward in the summer season. Numerous coastal villages were established with a considerable population for the summer months of each year, but they were deserted during the long winter when their inhabitants returned south to a warmer clime. Gradually, however, certain of these villages, especially those on the southern and western coasts, became inhabited all the year round, and a little land was cultivated. Ultimately fishing gave place to agriculture and to the exploitation of the forest resources of the island. In spite of its relative decline, however, the fishing industry of Hokkaido to-day is more important than ever before, both as regards the number of people engaged in it, and the value of the products—Y.50,000,000 (yen—50 cents) average for 1917-1920. In fact, it seems clear that fishing will remain one of Hokkaido's chief industries.

Outstanding features of the industry are the large herring catch of the western coast, the cod catch of the Okhotsk Sea, and the annual run of salmon up the streams. The kelp harvest, which furnishes food sold both in Japan and in China, and the production of large quantities of fish manure (by letting fish rot on the beaches) are also significant resources. Only a small part of the products of the Hokkaido fisheries is consumed on the island. The bulk of the catch is exported to the near-by markets in the densely populated parts of Japan and to China.

Numerous fishing villages along the coasts of Hokkaido add an extremely picturesque element to the naturally attractive landscape of the island. The typical village consists of a score or so of low, solidly built log houses, with roofs of rough-hewn shingles weighted down with many stones to withstand the gales. It possesses several sharp-prowed fishing boats that may be pulled up on the beach when not in use and that are launched for a trip by the united efforts of most of the inhabitants of the village. Not so picturesque or so conspicuous as these fishing villages, but of great importance as indicating the trend of things, is the number of scientific fish hatcheries and experiment stations.

Forest and Mineral Resources

Exploitation of the timber resources of Hokkaido did not become important until the 1890's or 1900's. Since that time, however, cutting has been rapid, and, though there remain considerable areas of forest untouched by the woodsman's ax, the not distant future will probably see a rapid decline in logging and lumbering. As usual in a new country logging methods are wasteful, taking only the best and leaving slashed and cutover forests to disastrous fires, reminding one of early logging in Wisconsin or Michigan. The chief woods cut for lumber are oak and pine. The larger sawmills are near the mouths of the principal rivers, for most of the logs are driven down the streams, although now use is also being made of railroad transportation. The greater part of the lumber is exported either to the other Japanese islands or to the coast of China. Spruce is cut for use in the pulp mills at Tomakomai on the southern coast of the island. These mills are said to be the largest of their kind in the Far East.

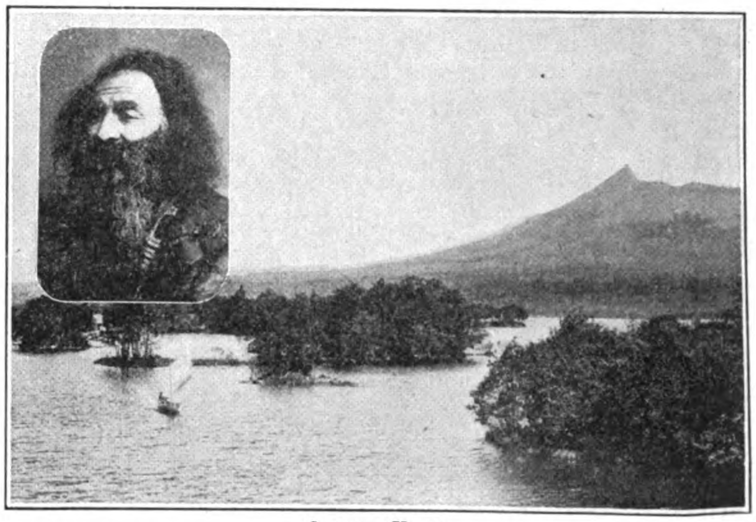
The forests of Hokkaido are of a very different type from those of the southern islands. The red pine and the broad-leaved evergreens, such as live oak and camphor which characterize the southern islands, are absent in Hokkaido, and in their place are the northern conifers and mixed hardwood and conifers. Beyond the difference in climate the relative proximity of Hokkaido to the Siberian mainland, whence certain tree species may have migrated, may be responsible in part for the difference in forest type between northern and southern Japan.

The coal of Hokkaido constitutes an important fraction of Japan's total coal resource. The deposits of northern Kiushiu are of somewhat greater magnitude than those of Hokkaido, but they are being exploited rapidly, so that the importance of the latter in the not distant future will be considerably greater than at present. The chief fields of the island are those of the Yubari district, not far northeast of the port of Muroran. In this district mining is carried forward in vigorous fashion, with several thousand miners employed. The product is used on the railroads and in the steel mills at Muroran and sold as bunker coal. It is also exported to other parts of Japan and to the China coast. Of the 26,400,000 metric tons of coal produced in Japan in 1917, 3,700,000 tons were produced in Hokkaido.

The chief towns of Hokkaido are Hakodate on the southwestern peninsula, Otaru on the western coast, Muroran and Kushiro on the southern coast, and Sapporo, which is inland on the Ishikari Plain.

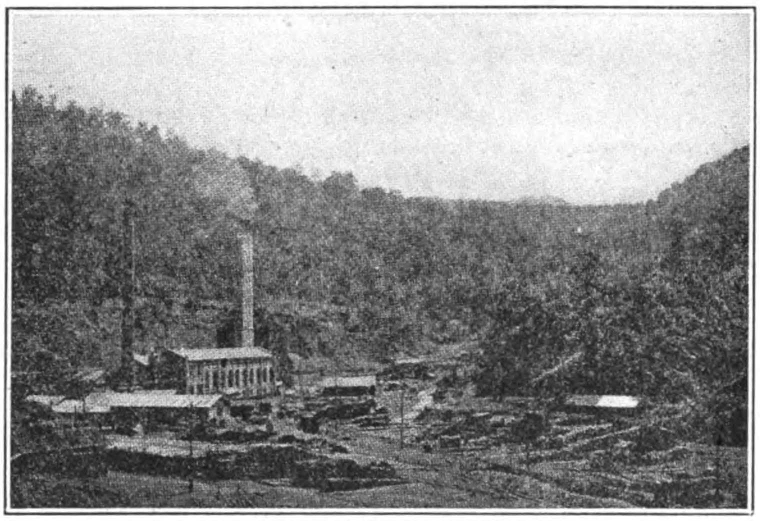
The Seaports

Hakodate, with a population of about 100,000, is the oldest important town on the island. For a long time it was the chief port, and it is still a rival of Otaru, which now leads among the ports.



Onuma Koen

A charming natural park in Hokkaido; and an Ainu man, a member of Japan's aboriginal race now living in Hokkaido



A Sawmill in Hokkaido
The logs are received and the lumber is shipped from the mill by rail

As compared with Otaru, Hakodate has the advantage of being just across the straits from the main island. It is therefore the northern terminus of the ferry connecting the railroad system of Hokkaido with that of Honshiu, and it handles the mail and passengers to and from the mainland. Otaru, on the other hand, is nearer the largest productive area of the island, the Ishikari Plain and so handles the bulk of the commerce of the island. Therefore, even though the harbor of Hakodate is excellent, with deep water and secure protection from storms, whereas that of Otaru has required considerable expenditure for deepening and for protective breakwaters, the importance of the latter port may nevertheless be expected to increase steadily. Otaru has growing exports of lumber, beans, coal, and fish and is the centre of a thriving fishing industry. The situation of Otaru with reference to the coal fields of the islands and to the importation of iron ore from China or Manchuria would seem to favor the establishment of iron and steel mills somewhere in the vicinity.

Muroran, on the eastern side of Volcano Bay, has an excellent natural harbor and is the chief export port for Yubari coal. The Tomakomai pulp mills also export through Muroran, and there is a timber trade of some importance. The iron and steel mills in the vicinity use coal from the Yubari fields and ore from China and Korea. It has been suggested that Muroran may become a port of call and a coaling station for vessels trading between North America and eastern Siberia. Muroran has a promising future in trade and manufacturing, but it will probably never approach Otaru or Hakodate in importance.

Kushiro is the port of the southeastern coast. Logs rafted down the river are exported whole or sawn in mills near the town and exported as lumber. Sulphur and coal are also brought down the river from the interior and exported, together with quantities of fish. Kushiro has a tributary area that is less productive than that of Otaru, and it has a less favorable location with reference to trade with the mainland than Hakodate. As a port it will always be less important than either Otaru or Hakodate, its possibilities of development being perhaps on a par with those of Muroran. The harbor of Kushiro is of the river-mouth type and is only fair.

TABLE II—FOREIGN TRADE OF CERTAIN HOKKAIDO PORTS AND OF KOBE, 1917:

(In millions of yen)

PORT	EXPORTS	IMPORTS
Kobe	479.8	530.1
Otaru	11.2	.3
Hakodate	6.4	.9
Muroran	2.3	1.6
Kushiro	1.1	—

From *Annual Return of the Foreign Trade of the Empire of Japan*, 1918, Part I.

All of these Hokkaido ports, even Otaru, are relatively insignificant as compared with the chief ports of Old Japan. The accompanying table of foreign trade statistics (Table II) indicates that in this respect, as in most other phases of economic development the northern island is very new.

The Capital

Sapporo, the capital of Hokkaido, is the chief city of the Ishikari Plain. Its political importance undoubtedly has had much to do with its growth to nearly 97,000 in 1913, but its geographical position in the largest and most highly developed agricultural area in the island, is chiefly responsible for its development. Thus, while the statement that "the city was artificially established by the government" is in a sense true, the causes of the growth of the city are far from "artificial."

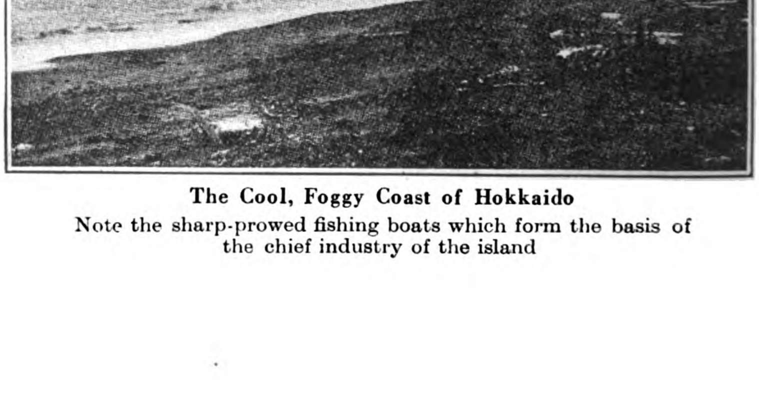
In appearance Sapporo is very different from the cities of Old Japan. The cold and snowy winters of the northland do not favor the thin-walled paper and bamboo structures that are typical of most of Japan. Because of the climate some other type of building must inevitably have been developed even had there not been another influence at work. This other influence was the group of American educators, engineers, and scientists who were employed by the Japanese government about the time Sapporo was founded and who introduced into Hokkaido the New England type of solid structures well adapted to cold and snowy winters. The result of the combined influence of climatic exigency and foreign suggestion is a type of building that is a curious mixture of Japanese and American, with elements of both but looking like neither. Another alien feature of Sapporo is the gridiron plan of wide streets, strangely in contrast with the narrow, crooked lanes of the typical Japanese city. Sapporo has a growing university, an agricultural college, and an agricultural experiment station, and the city is the educational as well as the political centre of Hokkaido.

The Immigration Movement

The foregoing sketch of the possibilities of Hokkaido naturally raises the question as to why they have not been utilized to a greater extent. Why has the population remained so sparse in contrast with overcrowded southern Japan? *

The reasons are several. For one thing, the cold and snowy winters in the north prove repellent. The people of Old Japan are not used to building warm houses, to keeping fires to warm their

* See the population maps in the article "The Distribution of People in Japan in 1913," by Mark Jefferson, *Geogr. Rev.*, Vol. 2, 1916, pp. 368-372.



The Cool, Foggy Coast of Hokkaido
Note the sharp-prowed fishing boats which form the basis of the chief industry of the island

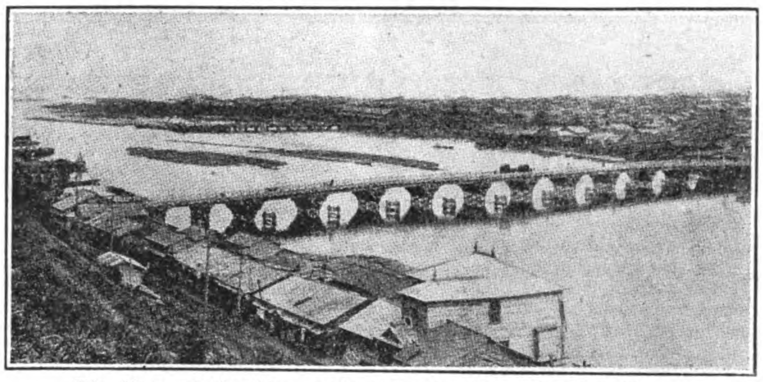
houses, and to wearing heavy clothing to protect themselves against low winter temperatures, and apparently they do not wish to settle where they must acquire such habits. This is a very real deterrent to settlement, as is attested by the repeated assertion of the fact by Japanese.

A second cause for the unwillingness of the Japanese to settle in Hokkaido was the fact that it was thought that rice could not be grown there. The staple crop in Old Japan is rice, and a plan of life with rice omitted is highly unattractive to the Japanese. Since it has been discovered that certain varieties of rice can be grown in parts of Hokkaido immigration to the island has been somewhat more attractive.

A third cause for the small immigration in Hokkaido has been and still is the existence of the rather hard and primitive conditions that belong to frontier communities. The clearing of the forest is a battle in itself. The long struggle which follows, in grubbing out the stumps from the fields, requires a quality not yet developed in most Japanese. The privations, both physical and social, which pioneers must endure, are numerous and stern and do not appeal to the men who have lived their lives in the highly organized communities of Honshiu, Kiushiu, or Shikoku.

Still another and somewhat less tangible cause for the Japanese not settling in Hokkaido is their love for the home district, where their ancestors have lived for generations. This is the more natural in view of the social organization, the religious belief, and the moral code of the Japanese.

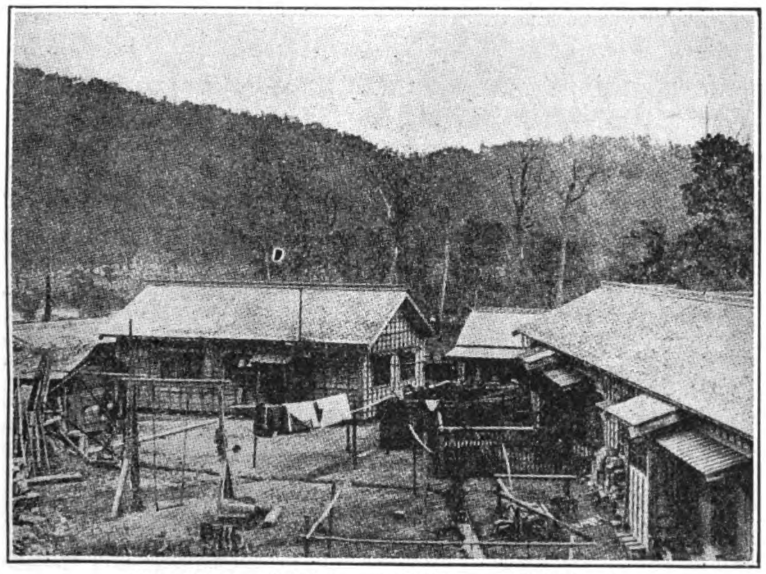
In the 1880's the Japanese government began serious efforts to attract immigrants to Hokkaido and to exploit the resources of the island. American scientists, engineers, and educators were employed and for several years were actively engaged in establishing agricultural experiment stations, making geological surveys, building railroads, and founding schools. The government offered various inducements to immigrants, such as cheap land, free transportation, and so on. The results, however, were disappointing, for immigrants did not come in as large numbers as had been hoped for, and many who did come returned later to their old homes in the south. Gradually, however, the number of immigrants has increased, and in 1914 some 320,000 more people went to Hokkaido from other parts of Japan than left the island. In view of the fact that the total population of the island in 1914 was something less than two million, this was a notable increase. If this rate of addition be maintained the population-absorbing capacity of the island will probably be reached in a quarter of a century.



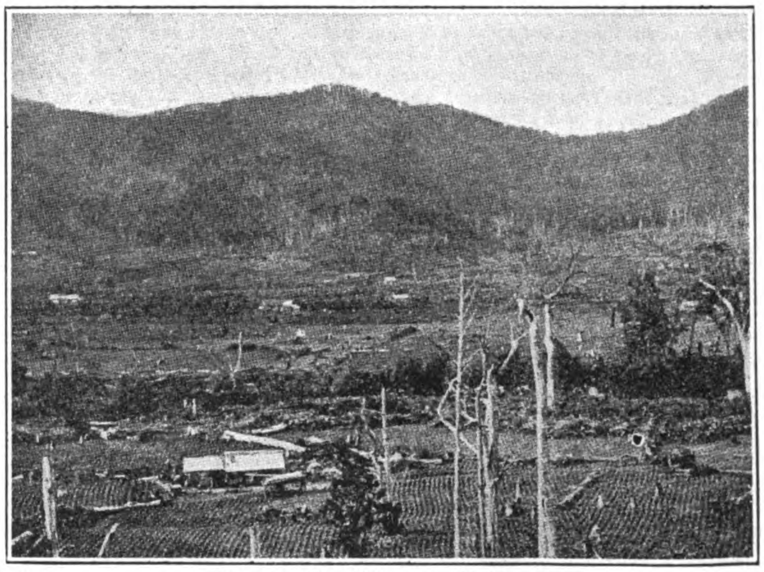
The Port of Kushiro at the Mouth of the Kushiro River
showing the rafts of logs brought down the river to be sawed for export

The influence of frontier conditions in Hokkaido on the habits and character of the immigrants from other parts of Japan is marked. The people have a certain kind of energy, a briskness of manner, and an upstanding independence of spirit that are much less noticeable in the inhabitants of the older and more highly organized communities of the southern islands. These differences are of a sort not unlike those between the people of the eastern part of the United States and those of the West. In the case of the United States the reflex influence of the frontier on the older communities was stimulating and helpful in the extreme. A similar reflex influence of Hokkaido upon the rest of Japan can be expected, although it is not likely to be as important as it was in the case of the United States, for in the United States the new regions were large and rich as compared with the old, whereas in Japan this is not the case.

Until Hokkaido becomes much more densely populated than now it will continue to be an increasingly important source of foodstuffs and raw material for manufacture for the industrial districts of southern central Japan. Its resources of agricultural land, forests, minerals, and fisheries are great enough to support a much larger population than it has at present and still leave a considerable surplus of products for export. Eventually, however, there will come a time when the island will have a population dense enough to require all or most of its products. But, however highly developed it becomes, Hokkaido never will be like the islands to the south. Fundamental differences in physical environment will be reflected inevitably and permanently in a different economic development, so that Hokkaido will always be the "Northland of Japan."



The Substantial Frame Buildings of Hokkaido
Are the result of climatic conditions plus the foreign influence introduced by the group of American experts employed by the Japanese Government



Frontier Conditions in Hokkaido
The mountains are covered with virgin forest while the isolated farmhouses are surrounded by partially cleared fields

FAR EASTERN IRON AND STEEL

IRON and steel industry was created by British brains, was perfected by British research. Those of us who are more intimately connected with the manufacture of iron and steel would do well to remember that the researches of our fathers founded an inheritance which is ours. Have you ever heard of a "jumped claim?" That is the position of the British steel trade to-day. We staked out the ground, others are being allowed to exploit it.

The work of British metallurgists and scientists gave the world its puddling furnaces, its crucible steel, its Bessemer steel, its open-hearth steel and its rolling and forging appliances. America makes more pig-iron than any other country, but the foundations of this trade were laid by the Englishman Dudley in 1619 with his charcoal fuel.

Coke was first made and first used as a blast-furnace fuel in England by Abraham Darby : in 1735 he conceived the idea of treating coal as the charcoal burners were treating wood. James Beaumont Neilson, of Glasgow, first suggested in 1823 the use of hot blast in the blast furnaces. It was the Englishman Palmer Budd who in 1845 suggested the heating of the blast by burning waste gases. Philip Taylor, in England, in 1840 proposed the closing of the top of the blast furnace, that the waste gases might be collected. G. Parry, in England, in 1850 invented that bell and hopper as a means for closing the top of the furnace. In 1860 the Englishman E. A. Cowper introduced the use of regenerative brick stoves.

The reverberatory puddling furnace was invented in England in 1784 by Henry Cort, and the wet puddling process was introduced by his countrymen James Hall and S. B. Rogers, somewhere about 1830.

In the steel industry we should remember that it was the English clockmaker Huntsman who, in 1740, was the first to make crucible steel ; and the method now generally adopted, by which it is possible to do away with the necessity of using blister or converted steel, was introduced by the Englishman Mushet in 1801.

While Bessemer steel is perhaps made the least extensively now in its country of origin, it were well not to forget that this epoch-making discovery was the work of the illustrious Englishman Henry Bessemer, who invented the Bessemer convertor and its necessary equipment in 1856. The success of the Bessemer process was established by the researches of another Englishman, Robert F. Mushet, who found that it was necessary to add spiegeleisen or manganese in some form or another.

The basic Bessemer process which gave the steel industry to the continent of Europe was the result of the patient investigation and study of two Englishmen, Sidney Gilchrist Thomas and his cousin Percy C. Gilchrist in 1878.

The open-hearth process of making steel was made a commercial success by Siemens, another of our British "Steel Wizards." The wave of his wand has given employment to a greater number of individuals than any other invention in the history of the world.

The two-high pull-over mill was the work of Cort, and the reversing mill was designed in 1866 in England by Ramsbottom. Charles While, another Englishman, invented the continuous mill in 1861. The steam hammer we owe to the genius of James Watt and James Nasmyth, Scotsmen both, whose names will ever be green in the memories of the engineer. The Englishmen Bessemer and Cledhill gave us the hydraulic press.

In the art of treating steel England has a glorious list of names—Saniter, Sorby, Roberts, Austin, Arnold, Stead, and Rosenhain who have contributed knowledge which has formed the basis of the process.—From *Beardmore News.*

Congratulations, Britons! As pioneers you have done exceedingly well. May you continue in the same good way, and though others make steps in newer directions, and it is hoped for the good of the world that some of the future inventions will originate in countries other than Britain, Britons will themselves turn them to good account and, if possible, improve. No one will blame them, for what is good for one nation these days is good for all.—Ed.

* * *

AMERICAN MARKET CONDITIONS.—Many independent steel manufacturing concerns in the Pittsburgh district to-day increased operations on what executives were united in saying was a "cautiously conservative" basis after about six weeks in which operations have been entirely suspended or greatly curtailed.

It was predicted that within a few days operation would be about 40 per cent. of capacity, with prospects of increased activity if conditions warranted.

Of the fifty-five independent blast furnaces from which reports were received by steel authorities here, twenty-one were in operation, while six mills increased operations recently :

Some of the business which brought about resumption was for the export trade, one order being for $1,000,000 for steel towers to be used in a wireless installation at Osaka, Japan.

From points outside the immediate Pittsburgh district came similar reports of increased operation to-day, including the Youngstown Sheet and Tube Company at Youngstown, O. ; Berger Manufacturing Company and Stark Rolling Mills Company at Canton, and Trumbull Steel Company at Warren.

Many plants resumed operations under changed labor conditions. In some instances wage reductions were accepted by the men, and in other the working time was reduced so as to bring operations within the limit of the eight-hour day and thus avoid time-and-a-half pay for overtime.

* * *

LARGE JAPANESE STEEL INQUIRY IN U. S. MARKET.—Chief Electrical Engineer Kunihiro, of the Taiwan (Formosa) Electric Power Co., has opened negotiations with American Bridge Co., subsidiary of the Steel Corporation, for over 1,000 steel transmission towers.

Formosa Electric Power Co., in connection with the construction of its new 100,000-kilowatt hydro-electric power station, expects to place equipment and machinery orders in the United States running into several million dollars.

In a sense Mr. Kunihiro represents the Japanese government, as the Japanese government of Formosa owns about half the stock of Formosa Electric Power Co. Mr. Kunihiro is now in Canada, but will return to New York soon and then proceed to England, France, Belgium and Germany for the purpose of continuing his study of electric power plants and in order to secure additional quotations from firms manufacturing electric power machinery and equipment.

Final placing of orders will, in most cases, be by cable from the company's headquarters in Japan, and will probably be held up pending completion of Mr. Kunihiro's European tour.

A local interest close to the situation says that while Europe may underbid the American market for much of the material needed, the unsettled conditions under which European manufacturers are operating may tend to throw the business to American firms, even at higher quotations.

Mr. Kunihiro's activities have nothing to do with the reports recently circulated in Pittsburgh of a Japanese government agent placing large orders for rails and railroad equipment. The placing of such orders in other than normal export quantities has never been verified.

* * *

IRON WORKS AT HARBIN.—A large iron works, Shwang Hou Shen, is to be established near the Sungari River, Harbin, this spring. Many Chinese and foreign engineers have already been engaged for the plant.

* * *

IRON FOUNDRY AT CHUNGKING.—A joint-stock company has been formed in Chungking for the establishment of an iron foundry. The project is to cost about $2,000,000.

* * *

JAPANESE OUTPUT OP PIG-IRON AND STEEL.—During 1920 the output of pig-iron and steel in Japan amounted to 730,000 and 570,000 tons respectively. Compared with 1919, there is a decrease of 70,000 tons in pig-iron and an increase of 20,000 tons in steel.

* * *

VOLCANIC IRON SAND.—The Japanese war office announces the successful method utilization of volcanic iron sand for the manufacture of steel, which, if adopted, it claims would make Japan wholly independent of steel imports.

* * *

JAPANESE MARKET FOR IRON STEEL.—Imports into Japan of iron and steel products, 1919, were as follows :

Articles.	Value.
Pig iron	$26,072,000
Ferromanganese ...	480,000
Ferrosilicon	105,000
Ferrochrome	186,000
Iron ingots, blooms, billets and slabs ...	2,126,000
Iron bars, rods, angles, etc.	23,860,000
Iron wire rods	4,995,000
Plate or sheet iron :	
Checkered	313,000
Galvanized, corrugated	212,000
Galvanized, other ...	726,000
Other	33,927,000
Tinned iron sheets ...	8,757,000
Iron wire, n. c. s. ...	590,000

Articles.	Value.
Iron wire, galvanized ...	$ 3,898,000
Iron ribbons	445,000
Iron bands and hoops ...	1,046,000
Wire rope	104,000
Iron pipes and tubes :	
Elbows and joints...	103,000
Drawn	349,000
Not coated... ...	5,902,000
Waste iron	2,861,000
Nails	2,562,000
Iron screws	695,000
Iron bolts, nuts, etc. ...	569,000
Iron rivets	121,000
Rails	10,933,000
Structural iron	305,000
Iron chains	693,000

The greater part of these iron products are imported into Kobe and Osaka and in that vicinity, and during the past few years nearly all (with the exception of pig iron and iron alloys) have been coming from the United States.

Engineering, Financial, Industrial and Commercial News

GOVERNMENT FINANCE

China's Internal Loans.—A meeting of the Peking cabinet recently drew up a general plan for the readjustment of internal loans. The following is a summary of the proposals :—

All internal loans, except the third, fourth and also the seventh year short-term loans, will be placed under one loan service, while the first and eighth year bonds will be revalued at 40 per cent. of their original value, with redemption in ten years. The redemption of the fifth year loan will begin in ten years, military loans being redeemed in four equal yearly payments. The redemption of the other loans will be unaltered.

In order to carry out the readjustment, $12,000,000 will be allocated from the salt surpluses, and a further $9,000,000 from the wine and tobacco revenues, but, pending the re-organization of the latter, the Chiaotungpu will provide $500,000 monthly, and, if the Chiaotungpu finds a difficulty in this respect, it may raise the necessary loans in co-operation with the bankers' association and the wine and tobacco administration, the latter, after the re-organization, being responsible for the Chiaotungpu's advances. All surpluses from the maritime and native customs may also be utilized for the readjustment plan.

When these funds are secured, they will be handed over to the inspector-general of customs, who will deposit them with the Chinese banks, the Chinese bankers working in co-operation with the inspector-general, and keeping the public fully informed regarding the security of the redemption funds.

The plan was subsequently discussed between representatives of the cabinet and the bankers' association. The latter approved the proposals, and congratulated the government on the practical nature of the scheme, adding that the government must now go on with plans for the disbandment of the soldiery.—*Reuter.*

Deficits of 1921 Budgets.—The budget of estimate for 1921 is found to show a huge deficit of more than $80,000,000 and the financial authorities are framing the following remedial measures :—

(1) Special opium tax and stamp dues	$20,000,000
(2) Land tax	15,000,000
(3) Wine and tobacco tax	12,000,000
(4) Tenth year public bonds... ...	24,000,000
(5) Salt surplus increase	5,000,000
(6) Reductions to be affected in government estimates	10,000,000
	$86,000,000

Government Receipts for Current Month.—The central government received the following revenues for the current month :—

(1) Remittances from various provinces	$ 2,340,000
(2) Other remittances to the finance ministry	2,310,000
(3) Salt surplus	1,800,000
(4) Other revenue collections... ...	1,600,000
(5) Miscellaneous collections	1,000,000
Total approximately	10,000,000
	$19,010,000

$300,000 Loan for F. K. Dockyard.—The central government is informed that the Foochow naval dockyard has borrowed from a certain foreign firm a loan of $300,000 with $400,000 bonds pledged as security, interest being charged at the rate of 20 per cent. per month.

Loan for Shanghai Mint.—A loan for $2,500,000 has been concluded for the Shanghai mint. The loan is to be furnished by the bank of China with the special treasury bonds issued by the Salt Gabelle as security. Payment will be made on the instalment plan on the basis of $70,000 monthly, extending over a period of three years. The loan is to be exclusively used for minting dollars.

Tenth Year Loan Bonds.—It is proposed to issue $6,000,000 of domestic loan bonds of the tenth year. These can be exchanged for bonds of the first and eighth years. The total face value of the bonds of the first and eighth years comes to $200,000,000, and $6,000,000 of tenth year bonds will not be sufficient to redeem the bonds of those two years which have been purchased in large quantities by Chinese banks and foreign investors at heavy discounts and these will profit by the exchange of old bonds for new ones.

Sino-French Corporation at Shanghai to Accommodate Peking.—With the co-operation of certain large French interests, the Chinese financiers, and capitalists, Chu Pao-san, Shen Lien-fang and several others have now organized a Sino-French banking corporation in the French concession with a capital of ten million dollars. It is reported that this new Sino-French banking corporation has signed an agreement with the ministry of finance for a loan of three million dollars to tide over the financial difficulties of the Peking government.

Rolling Stock Loan Concluded.—It is learned that the rolling stock loan being negotiated between the communications department and the native bankers' group has been concluded, the communications department having accepted the proposals of the bankers' group *in toto* on the 18th. The terms are reported as follows :

1. The communications department to advise the bankers' group as to the variety and quality of rolling stock required, together with its estimated cost, and the bankers' group to attend to the purchase of the same.
2. Beside the profit of the four railways mentioned in the previous despatch, the bankers' group to have lien on the profit of Peking-Hankow Railway as second mortgage.
3. The net proceeds of the loan to be 95, bearing annual interest at 8 per cent. and to be amortised in three years.

Japanese Government to Float Fifty Million Home Loan.—The Japanese government has decided to float a home loan amounting to fifty million yen. A meeting of the representatives of bankers was heldr ecently at the Bank of Japan, Tokyo, to discuss the matter.

Tsinan to Have Mint.—Acting upon the instructions of the ministry of finance, the Tsinanfu authorities are making preparations to establish a mint there to strike silver and copper coins, so as to ease up the strained money market in Shantung.

MINING

British Interested in Szechuan Mines.—Liun Chu-hou, Tuchun of Szechuan, has been approached by a British merchant who offered to invest $500,000 in mining enterprises in nine districts in Szechuan including Tachu, Tah-sien Wanyuan and Kaikiang.

Petroleum Possibilities in Miyagi Prefecture.—Mr. Fusajiro Izumi and four other leading men in Ishimo-maki town, Miyagi prefecture, are applying for permission to the official mining department of Sendai prefecture to prospect for petroleum in 7,000,000 *tsubo* of land in the Quai and Momogoni villages.

Graphite in Shantung.—A deposit of graphite suitable for lead-pencils has been discovered in the northwestern part of Laiyanghsien, Shantung, at a village called Yuchshih.

New Mine in Shantung.—A new mining company in Shantung with a capital of $20,000,000 founded by Chou Tse-chi, minister of finance, and Pan Fu, has been registered by the ministry of agriculture and commerce.

The Yu Tung Mining Co., Shantung.—Messrs. Chow Tse-chi and Pan Fu, the minister and vice-minister of finance, have organized the Yu Tung Mining Company in Shantung, which is capitalized at $20,000,000. The company has been registered with the ministry of agriculture and commerce.

Mining Interests in Anhuei.—Two new mining companies are to be organized in Wuhu, Anhuei. Anhuei is one of the provinces of China rich in mineral deposits. One of the new companies named Cheng Chu is an iron mining company, and the other, Li Feng, is a coal mining company, is to open the coal mine of Feng-wang Shan at Hsien-chen. These two companies will operate shortly.

COMMERCIAL FINANCE

Peking Syndicate.—The report of the Peking syndicate for year ended June 30, 1920, states that receipts amounted to £73,584, comprising interest on Chinese bonds and sundry investments, dividends on shares, etc. Expenditure on salaries and expenses of management in London, including income-tax, was £19,837, in Paris £4,090, and in China £24,350. French fiscal dues in respect of Shansi shares were £683. Receipts over expenditure amounted to £24,623, but against this there is a debit of £86,702 in respect of the exchange adjustment at June 30, 1920, of floating assets and liabilities in China and Paris, leaving a debit balance of £62,079, which is carried to balance-sheet.

The installation of the new electrical power plant is practically completed and excellent results are, the directors say, being attained both with regard to operations and economy. The situation at the mines has greatly improved, and it is anticipated that the new installation, together with the Hathorn Davey plant, will enable the present quantity of water and any possible imburst that may occur in the future to be effectively dealt with.

The output amounted to 468,777 tons, as against 550,547, the decrease being due to the fire resulting from the explosion which occurred in No. 1 pit in January, 1919, and to the large volume of water which prevented developments underground. Sales to the Fu Chung Corporation amounted to 427,024 tons, as against 460,524. The syndicate's proportion of profits made by the corporation for year ended March 31, 1920, was £5,841.

Chinese to Start New "Cotton Bank."—It was reported in Chinese banking circles recently that, for the development of the Chinese cotton industry after modern methods, Mr. C. C. Nieh, chairman of the Chinese general chamber of commerce, has petitioned the central government for permission to establish a Chinese cotton bank, with foreign and native capital.

Mandarins and Japanese Join in Commercial Enterprise.—A number of influential officials have entered into a commercial pact with the Japanese firm, Mitsui Bussan Kaisha, for the opening of two firms, the Shun Cheng Kung Ssu and the Li Chung Kung Ssu, the venture is capitalized at $10,000,000. Its aim is to deal in native products and to reclaim barren land in Chihli and introduce the plantation of grains on a large

scale. Mines in Shantung, Shansi and Chihli are said to have been pledged as security for shares taken but not paid for in cash.

Northern Finance.—Mr. Wong Chin-mu, director of the Taihu Lake Conservancy, has wired to the Peking government asking for permission to mortgage the one million dollars first year premium treasury bonds in his possession to the Sino-Japanese exchange bank in the capital for the sum of four hundred thousand dollars in cash for the purchase of dredging machinery from Japan. Mr. Wong is of the opinion that thousands of acres of arable lands can be made good for the cultivation of rice and wheat in Kiangsu province, after the Taihu Lake is properly dredged through modern methods by machinery.—*Asiatic News Agency.*

Chinese Maritime Revenue.—Revenue from the Chinese maritime customs for 1920 amounted to Haikwan Tls. 49,500,000, an increase of Tls. 3,500,000 over 1919. The collections for the principal ports are :—

	Kk. Tls.		Hk. Tls.
Harbin	933,200	a decrease of	36,500
Antung ...	1,130,500	„	214,700
Dairen	4,902,700	an increase of	345,800
Tientsin and Chinwangtao	5,496,100	a decrease of	69,700
Kiaochow ...	1,607,500	„	59,200
Hankow... ...	3,671,000	„	548,500
Shanghai ...	18,833,000	an increase of	4,543,300
Swatow	1,109,900	„	60,200
Canton	2,542,300	„	70,400

All foreign and indemnity obligations secured on the customs revenue, including the service of the re-organization loan, have been fully met and a sum of Shanghai Tls. 23,150,000 has been handed over to the Chinese government.

Establishment of Mongolian and Tibetan Bank Under Consideration.—The financial department is considering the scheme proposed by the superintendent of the Mongolian and Tibetan Affairs Board, for the establishment of a financial organ called the Mongolian and Tibetan Bank, with a capital of ten million dollars subscribed by the government and people. Briefly stated, the bank's object is to control finances in Outer and Inner Mongolia, Tsinghai and Tibet, protect natural resources in the regions, recover rights from Britain and Russia, and prevent the intrusion of British, Japanese, and Russian influence into those areas.

Company Loans in Korea.—Since last November, company loans to the amount of Y.22,000,000 were issued in Korea, viz. :

Central Tramway Co. ...	Y.3,500,000
Electric Industry Co. ...	2,500,000
Zenhoku Tramcar Co. ...	1,200,000
Chosen Colonial Bank ...	5,000,000
Oriental Colonial Co. ...	10,000,000

A New Sino-Japanese Bank in Tsinan.—A Sino-Japanese bank is being organized by prominent Chinese and Japanese. A capital of $10,000,000 is to be subscribed equally by Chinese and Japanese, in Tsinan, Shantung, and the bank will be formally opened on April 29, 1921.—*Chinese Press Report.*

INDUSTRIES

Manufacturing Industry.—Beans and wheat being abundantly produced in the eastern provinces of Russia, oil-extraction and flour milling constitute the bulk of manufacturing industry in the region. Besides, there are alcohol factories at Harbin and Muerhki run by Chinese, the production being quite comparable with the article imported from abroad. At Port Arthur, there is the Shunhsing iron works capitalized at three million dollars, where all sorts of machinery are manufactured. At Changchun there are many workshops, where gunny sacks are manufactured by using hemp locally produced, for the shipment of beans. At Liaoyang, Mukden, Hsinmin, Tiehling, Changchun, Kirin, Hailung, Kaiping, etc., there are paper mills totalling in number some 70. Although they are run on a small scale, still, the trade gives to quite a number of local people the means of their subsistence.

Sino-Japanese Firm, with Large Capital, to Manufacture Drugs.—Mr. Yu Tze-hang and some other Chinese have promoted a science and medicine company in conjunction with the Japanese capitalists.

The company will have a capital of five million dollars and will be registered in the ministry of agriculture and commerce as a Chinese company, though its capital will be entirely subscribed by Japanese.

The new company will manufacture all sorts of proprietory medicines for sale in China ; and with the exception of its accountant and assistant manager, who are to be Japanese subjects, all the staff will be Chinese.

The products of the company will be sold in the markets as Chinese manufactures. This is believed to be one of the effects of the boycott against Japanese goods by the Chinese students.

Mukden Cotton Mill.—The officials of Fengtien have organized a company, half official and half civilian, to operate a cotton mill at Mukden. The machinery used is to be of Japanese manufacture, according to recent reports. Official encouragement is being given to cotton growing in the district.

First Chinese Sugar Mill at Shanghai.—The Cantonese sugar merchant, M. Y. San, has established a sugar refinery in Shanghai for the improvement of the Chinese sugar trade with foreign countries, and at his request, the Peking government has agreed to exempt the payment of likin and sundry taxes on its products for a period of ten years. This is said to be the first Chinese sugar mill which competes favorably with similar foreign establishments in the Far East. M. Y. San has another sugar factory in Hongkong. This is reported to be the first Chinese industry which has received such favorable treatment at the hands of the Chinese government authorities.

Three Modern Plants for Nantungchow.—Three new industrial plants are to be added to those already existing at Nantungchow. A cement plant is to be inaugurated soon on a small scale. A fertilizer plant, with an operating company capitalized at $200,000, is to be opened soon, and the projected M. Y. San sugar refinery has picked the model city as its location.

Wusih's Progress.—At present there are ten oil mills in Wusih, Yen Fen, Heng Fen tah, Jie Fen, Cheng Mou, San Ho, Ju Yuen, Tsen Kan, Heng Tuh, Yoong Fen and Yuen Fah. They consume about 2,000 piculs of beans daily, 450 piculs bean oil are produced daily, and 4,400 piculs bean cakes, are made. The whole year's transactions amounted to $15,000,000.

There are sixteen weaving factories in Wusih, and 2,500 machines are in use. The total production of cloth during the year is about 500,000 pieces.

Exportation of Chinese Camphor.—Camphor is one of the chief exports of the nation of China, the largest share shipped abroad going to the United States where it is said to be used in the motion picture and photographic industries. Japan takes the next greatest amount. The important producing areas are located near Changsha, Hankow, Kiukiang, Foochow and Canton. A comparative table of the quantity and value of camphor exports since 1913 is given below :

	Piculs	Taels
1913	1,857	129,352
1914	1,810	131,574
1915	1,318	98,075
1916	2,377	181,673
1917	2,547	261,918
1918	5,742	428,074
1919	23,093	4,595,313

Meeting of Amalgamated Companies, Osaka.—The Japan-Russo fishery company, which has been recently amalgamated with the export confectionery and the Kamschatka fishery company, held their annual meeting on March 13 at Osaka. The total capital will be increased to Y.27,950,000, with Y.18,950,000 paid up.

Takayama Lumber Company, Tokyo.—The Takayama Lumber Co., Ltd. was recently organized for the sale of general lumber. Capital : Y.200,000, one half paid up. Office : 12 Oke-cho, Kyabashi-ku, Tokyo. Manager : Mr. M. Takayama.

Iron, Copper and Metal Works, Tokyo.—The Kawashima Shoten Co., Ltd. was recently organized for the sale of iron, copper and metals. Representative : Mr. Fukutaro Kawashima. Office : 6 Kodenma Kami-cho, Nihonbashi-ku, Tokyo.

Japanese Lumber and Stone Co.—The Kanoya Shoten Co., Ltd. was recently organized for the sale of lumber and stone. Representative : Mr. Motskichi Kinoshita. Office : 3511 Kameyedo-machi, Tokyo-fu.

Japanese Lumber Company.—The Nanshin Lumber Works, Ltd. was recently organized for the purpose of doing a general lumber business. Capital, Y.1,000,000, twenty thousand paid up. Managing Director : Mr. R. Kushige. Office : 15, Imairi-cho, Shiba-ku, Tokyo.

Printing and Publishing Works, Tokyo—The Oji Printing Press Co., Ltd. was recently organized with a capital of Y.30,000 (one half paid up) as a general printing works and publishing business. Manager : Mr. J. Ishikawa. Office : 505 Ojimachi, Tokyo-ku.

Japanese Machinery and Tool Factory.—The Sawada Electric Machinery & Tool Works, Ltd. was recently organized to manufacture general electric tools. Representative : Mr. Katsuzo Sawada. Office : 2,400 Kameyedo-machi, Tokyo-fu.

Cotton Yarn Factory in Mukden.—A cotton spinning and weaving factory has been started in Mukden known as the Spinning & Weaving Company, Ltd., of the three eastern provinces. The capital is $1,000,000 in 100 shares of $10,000 each. War-lord Chang Tso-lin holds 50 per cent. of the shares.

Brick, Cement and Building Materials, Nagoya.—The Kuno Shotai Co., Ltd. was recently organized for the sale of brick, cement and building material. Office : 23 Sanchome, Mitsukura-cho, Naka-ku, Nagoya. Representative : Mr. K. Hirano.

Lumber Mill, Osaka.—The Kawachi Lumber Mill Co., Ltd. was organized recently with a capital of Y.50,000 quarter paid up, for the manufacture and sale of lumber. Office : Tondabayashi-machi, Kawachi-gun, Osaka-fu. Manager : Mr. I. Okutani.

Osaka Iron Foundry.—The Umemoto Shoten Co., Ltd. was recently organized with a capital of Y.400,000 fully paid up, to export and import iron and nails. Office : 6 Shichome, Honcha, Higashiku, Osaka. Managing Director : Mr. Yeizaburo Umemoto.

Japanese Iron Foundry.—The Kimurashin Shoten Co., Ltd. was recently organized for the sale of iron of all kinds. Office : 24 Shichome, Minami Kyntaro-machi, Higashi-ku, Osaka. Representative : Mr. Shinjiro Kimura.

Iron Works, Osaka.—The Kanabishi Co., Ltd. was recently organized for the sale and export and import of iron. Office : 17 Itchome, Junkeicho, Minami-ku, Osaka. Representative : Mr. R. Saito.

Electric Bulb Company, Tokyo.—The Tokyo Patent Bulb Co., Ltd. was recently organized with a capital of Y.300,000 fully paid up, for the manufactory of patented bulbs. Managing Director : Tokunosuke Takahashi. Office : 6 Shin Sakurada-cho, Shiba-ku, Tokyo.

Japanese Bicycle and Motor Cycle Factory.—The Mitsuwa Shokai Co., Ltd. was recently organized for the manufacture and sale of bicycles and motor cycles, and the export and import of the above. Office : 2 Suihiro-cho, Kanda-ku, Tokyo. Representative : Mr. S. Matsuda.

Lumber Mill, Tokyo.—The Maruju Lumber Mill Co., Ltd. was recently organized for the sale of general lumber. Office : 3 Shimadagashi, Fukagawa-ku, Tokyo. Representative : Mr. K. Tanaka.

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Two Cotton Mills at Woosung.—Two cotton mills are in course of construction at Woosung.

Weaving in Wuhu.—There are now nearly fifty weaving establishments in Wuhu, Anhuei ; and five more are soon to be established.

China's Foreign Trade in Wood Oil.—Wood oil is one of the staple commodities in China's foreign trade. During the war, China's foreign trade was somewhat depressed, but exports are now increasing. Below is a list showing the quantity exported from 1911 to 1920 :

Quantity	Year
14,903 tons	1911
24,396 „	1912
8,884 „	1913
5,533 „	1914
8,513 „	1915
20,330 „	1916
2,266 „	1917
17,345 „	1918
24,284 „	1919
20,821 „	1920

In January of this year there was no improvement in the dull state of China's tea trade and the brief revival experienced in February was short lived for the market has again dropped to its state of inactivity. Prospects of a change do not appear to be bright.

Report on Conditions of Cotton Yarn Mills in China.—Particulars as to business of China's native and foreign-owned mills are given hereunder.

NO. OF SPINDLES IN COTTON YARN MILLS IN CHINESE TERRITORY (up to January 31, 1921).

Present No. in total	1,422,837
Present No. in working	1,391,304
Being installed for work within this year	115,000

RAW COTTON CONSUMED (from August 1, 1920 to January 31, 1921).

Chinese raw cotton	349,577 bales
American raw cotton	8,318 bales
Indian raw cotton	51,311 bales
Total	409,206 bales

RAW COTTON IN GODOWNS (up to January 31, 1921).

Chinese raw cotton	164,274 bales
American raw cotton	4,610 bales
Indian raw cotton	13,985 bales
Egyptian raw cotton	76 bales
Total	182,945 bales

Remarks : 1 bale=500-lbs.

Nantungchow's Industrial Enterprises—Extension of Dah Sung Cotton Yarn Mill.—Within a few years the Dah Sung Cotton Yarn Mill, Nantungchow, has made a good progress in its business. Extension of the mill has been planned and is being energetically carried out. Besides 70,000 spindles and 400 looms now in operation at the head mill, an order of 10,000 spindles and 300 looms has been placed with a British firm. The extension scheme also includes the establishment of seven branches, of which the first branch at Chungming and the second branch at Haimen have already commenced operation, the latter being equipped with 36,000 spindles and having a 20 *li* length of light railway for shipment of material to rail-head. Spindles ranging from 15,000 to 60,000 and looms from 600 to 1,000 are to be installed in the remaining branch mills.

A Metal Plating Co. in Wuhu.—Last year several wealthy persons of Wuhu, Anhuei, planned to found a metal plating company in the city with a capital of twenty thousand dollars. The total amount of capital has now been collected and the company is expected to commence operations shortly. The new company is to be known as the Yung Sun Metal Plating Co.

Extension of Match Co., Wuhu.—The match company at Wuhu, Anhuei, named Dah Chong, established last year, has now increased its capital to $140,000. The company is transacting a very large volume of business.

BUILDINGS

New Halls at Kobe and Yokohama.—The Nippon Yusen Kaisha plans to build two halls, at an estimated cost of Y.500,000. That at Yokohama is to be finished this month at Kaigan-dori, but a suitable site has yet to be found in Kobe.

New Library at Tokyo.—A new library is being built at Hiyoshi Hill, Shiba-ku, Tokyo, by Mr. Raito Fujiyama, the chief of Tokyo chamber of commerce and will be finished in August at a cost of Y.220,000. It will be known as the Fujiyama Industrial Library.

New Bankers Building, Kyushu.—The new bankers association building is being erected near the Daido Life Insurance Building, Fukuoka city, Kyushu.

Construction of Japanese Parliament Building.—The plan for the new Japanese parliament building has been published. The structure will be a three-story re-enforced concrete building on a site comprising 3,746 *tsubo*, about 3 acres, to be completed in 1927.

New Site for Hospital, Osaka.—The Namba Hospital of Osaka has bought 10,000 *tsubos* of land at Osaka for the re-building of their hospital at an estimate of Y.1,000,000.

New University.—A new government university will be built next year on the site of the former Yuanmingyuan palace, which was destroyed by the British and French troops some sixty years ago. The present university will be handed over to the ministry of communications. Construction of the new university will begin as soon as Chancellor Tsai Yuan-pei returns from Europe.

Hankow's Bund Scheme Deferred.—The annual meeting of the British ratepayers of Hankow has passed off satisfactorily. The bund reclamation scheme was deferred for a year, though strongly pressed by the representatives of Messrs. Jardine, Matheson & Co., and Messrs. Butterfield & Swire.

White Cross Hospital in Kamakura.—The White Cross Society are building a children's hospital in Hichirigama at a cost of Y.150,000.

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A Large Building for a Technical College in Woosung.—A large building is being built for the Tung Chi Medical and Technical College at Woosung, in grounds of about 150 *mow*. The cost of the work is estimated at more than $270,000, and the work is expected to be completed by the end of this year.

New Building for the General Chamber of Commerce, Nantungchow.—A new building is to be built for the general chamber of commerce of Tungchow, Chungming, Haimen and Taishing at Nantungchow to take the place of the old building which is not spacious enough to accommodate the present increase of membership, as decided at the joint conference of the chambers of commerce of four cities above-mentioned. The building is to be situated at the southern part of the city, and will occupy a tract of land of about more than 30 *mow*. The building will include apartments for a bazaar and booths for money dealers and cotton trandesmen. The construction work is expected to be completed in August or September of this year, and the cost is estimated at approximately $170,000.

RAILWAYS

Japanese Railway Extension.—By sanction of the ministry of communications and the Fengtien government the railway authorities have signed a loan agreement with the South Manchuria Railway Company for the extension of the Sze-Cheng railway to Taonanfu, Eastern Mongolia, as a branch of the Japanese line; but the present plan is to extend the Szepinchieh-Chengchiatun railway to the suburb of Tungliao district. The distance is about two hundred and fifty Chinese *li*. Japanese and Chinese are surveying the line now.

Rolling-stock from America.—The first order for a large number of cars to be purchased under the railway agreement concluded between the ministry of communications and the Chinese bankers will be placed with American manufacturers. This decision was reached by railway experts appointed by the ministry and the bankers special plans showing the nature of rolling-stock required were prepared by these experts.

Chinchow-Tsitsihar Line Again Brought to the Front.—According to a report alleged to have come from the communications department, the Chinese government is seriously considering to construct a line connecting Chinchow with Tsitsihar via Taonan, in consideration of the frontier defence of Kirin and Hailungkiang, which is daily growing in importance, and the necessity of direct communication with the border provinces with Central China by means of China's own railway, instead of availing of the South Manchuria line, as at present.

Indo-China May Get New Railroad.—Before sailing to resume his post as governor-general of French Indo-China, M. Maurice Long stated that the Indo-Chinese internal loan granted by parliament is to be used chiefly for completing the railway system, with particular attention to the establishment of a through line to China.

Double Track Line to Shanhaikwan.—With regard to the project of building an additional track on the section of the Peking-Mukden Line which connects Tangshan with Shanhaikwan, the cost of the new track is estimated at $6,000,000 which will be paid by means of a short term loan from the British-Chinese Corporation and repayment of the loan will be effected by appropriations from the surplus of the Peking-Mukden Railway receipts. The proposal, it is reported, emanated from the British legation which recommends this improvement on the ground that it would much facilitate the transportation of coal from Tangshan in larger quantities. The scheme was discussed at a cabinet meeting and was duly approved.

To Construct Chinchow-Aigun Railway.—It is reported among Chinese militarymen that for frontier defensive purposes, the high authorities in Fengtien and Heilungkiang have approached the Peking government recommending the construction of the proposed Chinchow-Aigun trunk line which was dropped on account of the joint opposition of Russia and Japan some years ago.

Suiyuan-Powtaochen Railway.—A new railway will be built between Suiyuan and Powtaochen.

New Station on Joban Line.—The imperial government railways announce that a new station has been opened at Yorunomori, between Tomioka and Ono on the Joban line, from March 15.

New Japanese Railway Lines.—The improvement of the Saisatsu Railway line in Satsuma, Kyushu, includes the construction of a nine-mile railway line between Sennai and Nishikata. A further line between Nishikata and Akune will be finished next month, and land is being purchased for a line between Akune and Izumi.

Sleepers for Tsin-pu Railway.—The Tientsin-Pukow Railway has placed an order with the China Import Lumber Co., for 225,000 railway sleepers at a total cost of $784,500.

To Extend Railway with Japanese Aid.—By sanction of the ministry of communications and the Fengtien government the railway authorities have signed a loan agreement with the South Manchuria Railway Company for the extension of the Sze-Cheng railway to Tannanfu, eastern Mongolia, as a branch of the Japanese line; but the present plan is to extend the Szepinchieh-Chengchiatun Railway to the suburb of Tungliao district. The distance is about two hundred and fifty Chinese *li*.

Japanese and Chinese are surveying the line now.

Rolling-stock Unsuitable for Use.—Hsu Shih-chang, managing director of the Tientsin-Pukow Railway, reports to the government that he has received a consignment of 300 heavy-weight goods cars supplied by a certain foreign firm and the cars have been found unsuitable for the use of the Tsinpu Railway. To settle the matter

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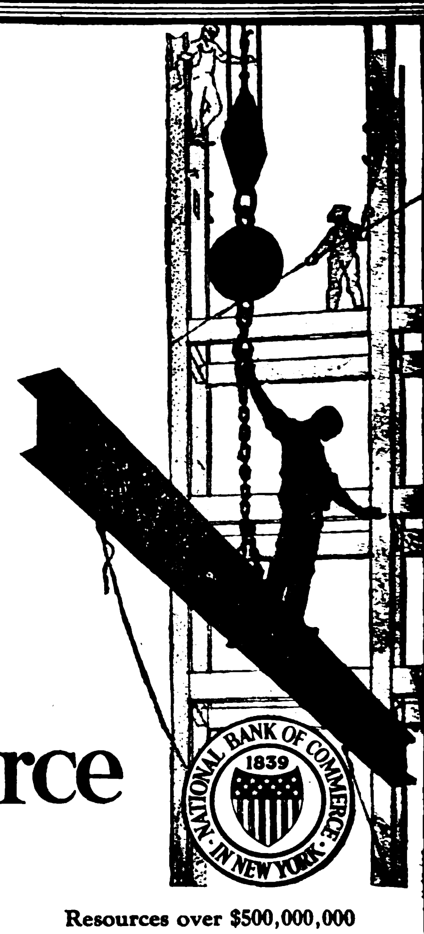

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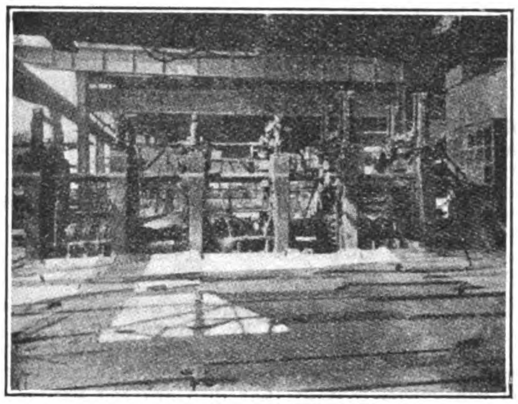

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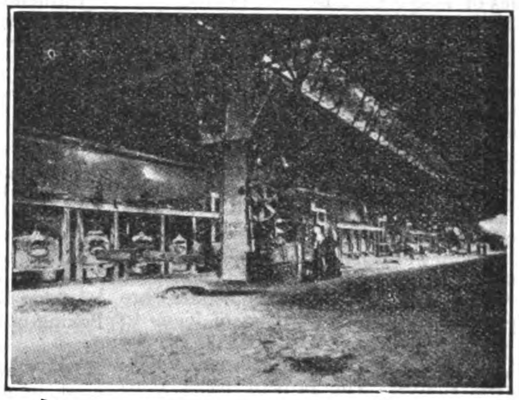

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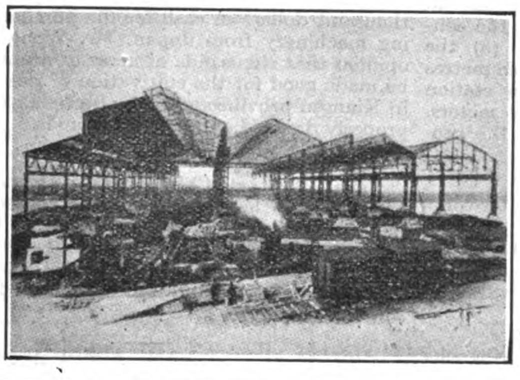

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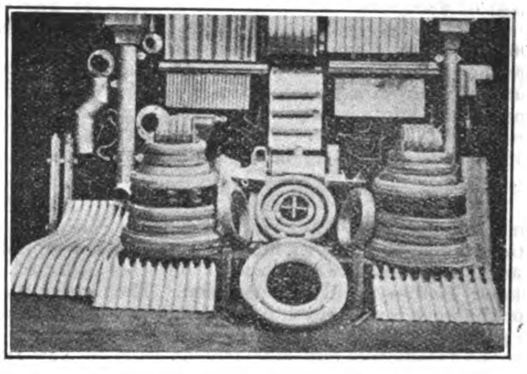

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by compromise, the government has arranged for the cars to be shared between the Peking-Mukden and the Tsinpu Railway.

Manchurian Railway Projects.—Marshal Chang Tso-lin is conferring with the government and the authorities in Kirin and Heilungkiang concerning the construction of the proposed Chinchow-Tsitsihar Railway which will connect with the Peking-Mukden line at Chinchow for military and other strategical uses in Manchuria; but as the Japanese regard the Chin-Tsi line as a formidable competitor of their South Manchuria Railway, the Japanese press in Manchuria opposes it strongly. It is reported that in order to test the sincerity and strength of the new consortium and its real relations with Japan, the Chinese will shortly approach the consortium for a loan for the construction of the Chinchow-Tsitsihar Railway and the result will show whether Japan's so-called "special privileges" in South Manchuria and eastern Mongolia have been recognized by the powers.—*Asiatic News Agency.*

New Electric Engines for Tokyo Suburban Line.—The imperial government railway will use the roller type of electric engines for the suburban lines of Tokyo city, and orders have been placed with foreign firms for eight of these. Others will be purchased if these prove satisfactory.

New Line, Kowloon-Canton Railway—A railway is projected between Waichow and Ping Wu (Kowloon-Canton railway), a distance of 45 miles. The cost is estimated at $3,000,000.

Budget of the South Manchuria Railway Company.—The South Manchuria Railway Company has published its budget for the next fiscal year in which the ordinary expenditure of approximately Y.200,000,000 is estimated. The expenses for engineering works, amounting to Y.70,000,000 are to be defrayed by the second floating of loans to the extent of Y.12,000,000, Y.10,000,000 of the reserve fund for the fiscal year of 1920, and Y.50,-000,000 of new shares. The present fiscal year, according to Mr. Nakamishi, vice-president of the company, quoted in the *Yamato*, saw the curtailment of the estimated enterprises owing to the high price of commodities.

Contemplated Railway Line in Szechuan.—Surveying work has been commenced for a short railway line from Tzelieutsing to Tenchingkuan, Szechuan.

New Double Rail on the Peking-Hankow Railway.—The Peking-Hankow Railway administration contemplates doubling the rail on the Lukowjao-Liulichang section of the Peking-Hankow Railway.—*Chinese Press Report.*

Tsinpu Railway Buys New Cars.—The Tientsin-Pukow Railway has placed with an American manufacturing firm an order for 100 cars estimated at a total cost of $800,000.

$1,200,000 for Shih Cheng Railway.—A loan of $1,200,000 has been borrowed by the Shih Cheng Railway authorities from a certain foreign source so as to enable the administration to extend the line in question to Chengchow. The loan is borrowed at ninety-seven and is to be repaid in four years' time.

Plan for Double Rail.—For facilitating the transportation of coal the railway line on the track of the Tangshan-Shanhaikwan section on the Peking-Mukden Railway will be doubled. The total cost for the work is estimated to be $5,000,000. In addition to this $140,000 will be expended on the purchase of locomotive and $900,000 on cars.—*Chinese Press Report.*

China—Railway Construction.—Construction work on another small section of the Szechuan-Canton-Hankow Railway line is shortly to be undertaken, according to the director-general of the railway. The section in question lies between Chuchow, in Hunan, and the Kuangtung border. A party of engineers has been sent into Southern Hunan for making surveys. The region is mountainous and infested with bandits, and General Chao, commander of the Hunan troops, has sent a detachment of soldiers to afford protection. As a preliminary to the task, a motor road will be built along the proposed route for carrying materials.

A presidential mandate has been issued sanctioning the construction of the Ching-Meng branch railway. This really constitutes an extension of 65 kilometers of the Tao-Ching Railway line from its present terminus, Chinghua, to Menghsien on the left bank of the Yellow River, just northeast of Honanfu. The latter point is an important ferry junction through which passes the bulk of the trade between Luanfu and Tzechow districts of Shansi, and the territory to the south. The line will tap a densely populated and highly cultivated region. It will be constructed by the Peking Syndicate, Ltd., general managers of the Tao-Ching Railway, who are heavily interested in mine concessions along the line.

The syndicate will make a loan to cover the cost of construction the same to be secured (1) by a general guarantee of the government, (2) by a mortgage on the permanent way and the revenues of the line, and (3) by certain revenues of the Tao-Ching Railway. The latter line is to be used for the transportation of needed materials and when construction is completed, its rolling stock will be leased to the Ching-Meng Railway on a rental basis.

Chinchow-Shouyang Branch of P. M. Railway.—Land is being purchased by the ministry of communications for building a branch of the Peking-Mukden Railway between Chinchow, Fengtien and Shouyang, Jehol.

Rolling-stocks for P.-H. and S.-N. Railways.—The Peking-Hankow Railway board has purchased 40 passenger cars and 30 locomotives from Andersen, Meyer & Co., Ltd. The request of appropriating part of the rolling-stock loan, lately contracted between the Peking central government and the Chinese banking group, for the purchase of 100 passenger cars and 6 locomotives by the Shanghai-Nanking Railway board has been sanctioned by the Peking government.

Sze-Tiou Railway in Fengtien.—The construction work of the Sze-Tiou railway in Fengtien will be commenced on April 1, 1921. About three thousand famine sufferers will be transported there as laborers.

Timber for T.-P. Railway.—Two hundred and twenty-five thousand pieces of logs have been purchased by the Tientsin-Pukow Railway board from Hsiang Tai Timber Yard at a cost of $784,500.

WATERWORKS

Extension at Tungkadoo.—In regard to the extension of the Chinmean waterworks plant at Tungkadoo it is pointed out that a study of the projected plans has been made. These include: (1) The erection of special scaffolding to take in river water at all states of the tide; (2) the construction of a new pumping station; (3) the erection of a new water tower of 1,000 cubic metres capacity; (4) design of filters for the new station capable of a daily distribution of 26,000 meters. Materials have already been secured for the projected extensions.

New Waterworks in Wuchang.—New waterworks are to be established in Wuchang, Hupeh. The total capital is $1,500,000, of which $400,000 has been collected. It is registered with the ministry of agriculture and commerce. Construction will commence shortly.—*Chinese Press Report.*

New Irrigation Scheme in Korea.—The Nagooka Colonial Company are developing our irrigation scheme in Keiki province, Korea.

To Install More Water Pipes in Shanghai City.—The water pipes installed in the Shanghai city are not sufficient to meet the present demand so the Shanghai Chinese Waterworks plans to install water pipes extending to a length of about 9,000-ft. (Chinese measure) in and around the Chinese city. The pipes will be made by the iron works at Pootung and the Chinese arsenal separately, and the cost of the work of installation of these pipes is estimated to be about one hundred thousand dollars.

HARBOR WORKS

Construction of Hulutao Wharf.—The cost of constructing the harbor and other important works for the development of Hulutao, Chili, as a commercial seaport is estimated at over $3,000,000. A French firm has offered to advance the sum required. It is stipulated in the contract that the work must be completed within three years from the date of signing of the contract.

Proposed Reconstruction of Lienshan Harbor.—With reference to the reconstruction of Lienshan Harbor (at Hulutao) south of Shanhaikwan, it has been decided by the Chinese authorities concerned to invite tenders concerning the reconstruction work from a Dutch engineer of Shanghai, as recommended by Mr. Yeh (minister of communications, Peking) who visited Fengtien (Mukden) towards the end of last year, and another engineer in the service of the South Manchuria Railway Company. These tenders are, we understand, to be presented early in April.

The expenses required for the reconstruction work are estimated at about S.Y.17,000,000 and the term thereof is put at seven years. The expense amount is to be defrayed in equal shares by three eastern provinces and the Peking-Mukden line of the Chinese government railways.

China to Build Hulutao Harbor by Herself.—According to official reports Mr. Yeh Kung-cho went to Hulutao to inspect the harbor works there, with a view to deciding whether the construction plan is feasible. The director of the work is said to have $8,000,000 in hand and it is officially stated that there is no intention to obtain foreign money to complete the enterprise.

Plan of Constructing a Big Harbor at Haichow Contemplated by Government.—The department of communications is contemplating the construction of a big harbor at Haichow to rival Shanghai. With that in view, the matter of building the Hai-Lan Railway at all possible speed has been decided upon.

Sea Dyke at Chinhai.—A sea dyke of several hundred feet in length has been constructed by the San Peh Steamship Company, of which Yu Ya-ching is the director, at Chinhai, Chekiang, in order to open the harbor for small steam vessels. Further plans call for the construction of a 5,000-foot dyke during this year.

Taihu Lake Conservancy Plans Dredging of the Lake.—Mr. Wong Chih-mu, director of the Taihu Lake Conservancy, has wired to the Peking government asking for permission to mortgage the one million dollars' worth first year premium treasury bonds in his possession to the Sino-Japanese exchange bank in the capital for the sum of four hundred thousand dollars in cash for the purchase of dredging machinery from Japan. Mr. Wong is of the opinion that thousands of acres of arable land can be made good for the cultivation of rice and wheat in Kiangsu province after the Taihu Lake has been properly dredged on modern methods.

Naval Base at Chinwangtao.—A part of the Chinwangtao harbor has been chosen by the ministry of navy for a naval base. The cost is estimated at $1,700,000. There are two special advantages attached to the spot chosen, namely, that it is not ice-bound in winter and fresh water can be easily got.

Taching Ho River to be Studied by Naval Surveyors.—At the suggestion of the civil government of Chihli, the ministry of the Chinese navy is sending experienced naval surveyors to the Taching river for surveying purposes.

In his telegram to the government, Mr. Tsao Jui says that the Taching river cannot be dredged without a foreign loan, because it is exceedingly difficult, at the moment, to raise Chinese capital for the purpose.

Tientsin mercantile circles oppose the foreign-capital construction of harbor at Taching river because they argue it will interfere with the

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commercial prosperity of Tientsin ; but they rather favor the building of harbor there with purely Chinese money.

Repair and Extension of Railway Wharves at Pukow.—A contract has been made between a Shanghai Shipbuilding Yard and the Tientsin-Pukow Railway board for the broadening of Nos. 9 and 10 floating-wharves at Pukow station to an extent of 1,524-ft. (Chinese standard measure) wider, and also for the repairing of Nos. 3, 4, 5, 6, 7 and 8 wharves. It is estimated that the work of broadening the two wharves will cost about $66,000. —*Chinese Press Report.*

PUBLIC WORKS

Municipal Improvements.—The Canton municipality is pushing ahead the scheme : (1) to demolish the city wall and its gates, 15 in all, leaving two northern gates for the protection of the Tuchun's yamên ; (2) to build main roads, public gardens and markets ; (3) to establish industrial factories for the absorption of the poor and the destitute. The work of demolishing the old city wall was commenced on the western section. This ancient and famous structure consisted of an inner and an outer wall, the former having been erected about 800 years ago and the latter, known as the new city wall, having been built some 300 years later. The entire structure has now been demolished except for a few hundred yards on each side of the five-storeyed pagoda, in the vicinity of the northern gates, which have been left intact. It has been decided by the municipal authorities that the site hitherto occupied by this ancient structure shall be utilized for the construction of a fine broad well-made modern road, on which it is intended to lay down tramway lines with a view to introducing a modern tramway system. This new main road will also be sufficiently wide to supply a long-felt need for motor traffic, which is now being gradually introduced into Canton by modern progressive men. The width of this road will be from 80 to 100 feet, and the entire length about six miles. A distance of over two miles in the south-eastern section has already been macadamized, and the completed road has been opened to jinricksha and motor car traffic. With the erection of more imposing modern buildings, Canton will become a very attractive city.

ROADS

Road to Employ Famine Sufferers.—The ministry of communications proposed to employ as many famine sufferers as is possible in constructive work. A national highway from Peking to Shanghai is one of the suggestions. A body of surveyors started from the metropolis recently to chart the road as far as Tsinanfu, the capital of Shantung. In accordance with their suggestions the highway will pass through Sincheng, Hsiunghsien (Siunghsien), Yuchang and Yenchowhsien. The final survey will probably be completed in the spring, and the civil governor of Chihli has been instructed to issue suitable notifications to the people in the districts concerned.

To Construct More Roads Near Peking, China.—Hankow Railway administration has communicated to the ministry of communications a proposal for the construction of the following highways, which it states will be of great benefit to the railway and will also provide work for famine sufferers :—

(1) From Kowyang to Mancheng, 60 li. (2) From Hsushuai to Anhsin, 67 li. (3) From Chichow to Yangchuan, 45 li. (4) From Wangtu to Chingfengtien, 23 li. (5) From Shuntehfu to Kuanhsien, 30 li. (6) From Hantanhsien to Tamingfu, 140 li. (7) From Hsuhsien station to Hsuhsien city, 2 li. (8) From Hsincheng station to Hsincheng city, 10 li. (9) From Hoshangchiao to Yuchen, 70 li. (10) From Chichow to Wuan, 100 li. (11) From Kuangluchen to Pengcheng, 30 li. (12) From Shunteh to Shueihsien, 45 li.

The above-mentioned roads are all connected with Peking-Hankow Railway. It is believed that the government will approve the scheme.

New Road in Korea.—A new road is being built between Poryoshi and Shinkyo in Korea. This should open up further business for the latter-named town, as there is a harbor, this is used by the Chosen Kisen Kaisha.

New Motor Road.—The Manchurian authorities have suggested the construction of a long distance motor road from Pukuei to Heiho and through Liaoho as far at Taonanfu in order to give work to famine sufferers.

Soldiers to Build Roads.—In view of the bad condition of the public roads in Shansi, General Yen has given orders to the commanding officers of provincial army ordering them to send their soldiers to build and repair the roads, first from Taiyuan to Yunchen and then to other districts. It is the intention of Governor Yen to construct modern roads throughout the province as a model for other provinces to follow especially as the troops have nothing to do at the present moment.

Shanghai-Liuhe New Road.—Plans are in progress to build a motor road from Shanghai to Liuhe, a distance of about 114 *li.* The total cost for the road, bridges and land is estimated at $170,000.

Tsinan-Lankow Road in Shantung.—An automobile road is to be built between Tsinan and Lankow town, Shantung, offering to famine sufferers, will be employed.

Tehchow-Lintsing Automobile Road in Shantung.—The Tehchow-Lintsing automobile road leading from Tehchow to Lintsing via Un-hsien, Wuchen and Shiatsin through a distance of about 70 miles is now being built by 4,000 famine sufferers. The Tehchow-Shiatsin section of the line has been completed, and the whole line is expected to be finished in March of this year.

Shanghai-Taichong Automobile Road.—An automobile company with a capital of $500,000 divided into 10,000 shares, half paid up at commencement, has been organized and several others, to provide for the construction of a 72-*li* long automobile road between Shanghai and Taichong.

Fengtien-Heilungkiang Automobile Road.—The Fengtien-Heilungkiang automobile road has been opened to traffic. The trunk line of the road runs from Pookwei to Liou via Heiho and Tiou-nan.

Chefoo-Weihsien Automobile Road, Shantung.—The Chefoo-Weihsien automobile road, Shantung, of a distance of about 650 *li* is being worked on by more than three thousand famine sufferers, and two-thirds of the whole line has been completed. The construction of this road is quite difficult as it runs through hilly country and twenty-eight bridges will have to be built. The work is expected to be finished in June of this year.

Chekiang and Anhuei to be Linked by an automobile Road.—A plan to build an automobile road between Szean, Chekiang, and Kwangteh, Anhuei, is being prepared. This road is to run for 30 *li* through hilly country from Kwangteh to Chiapah and for more than 20 *li* from Chiapah to Szean on a plain. A survey of the whole line of the road has been completed, and this remains now to carry on the work. Local wealthy persons are organizing a company with a capital of $300,000 to provide $150,000 for construction of this road and $100,000 for purchases and for erecting stations, leaving $50,000 for the reserve fund. The traffic management of the company is to erect three stations at Szean, Chiapah and Kwangteh.

Chekiang's Road Building Program.—In compliance with the order of the central government issued some time ago instructing all the provinces to co-operate in a nation-wide road building scheme, the program for the part of Chekiang province has been discussed and decided upon by the provincial assembly, a main road from Hangchow, Chekiang to Futien, Fukien, across the province from north to south for a length of about eight hundred *li* is to be built. The expenses will amount to about $950,000 a part of which will be borne by the central government.

BRIDGES

New Bridge for Canton.—The provincial assembly of Kwangtung has proposed that when the custom surplus due to the south-west is paid over, an appropriation therefrom should be made to pay for the cost of constructing a bridge between Canton city and Ho-nam (opposite to Canton on the opposite bank of the river).

Yellow River Bridge.—To study plans for the erection of a bridge over the Yellow River in place of the present one on the Peking-Hankow Railway, the ministry of communications intends to appoint a special commission, which will be composed of technical experts. It is proposed to engage the services of four experts, one from Britain, France, America and Belgium respectively as advisers to the commission. The ministers of the four countries mentioned have already expressed their willingness to obtain the services of suitable men. These technical experts are required to reach China not later than June 15.

Reconstruction of Japanese Bridge.—The Shoken bridge at Shibaku has lately been re-constructed, and the opening ceremony took place on February 3. This bridge is of iron with concrete foundations.

COAL

Japanese Open Coal Mines.—The Japanese firm of Okura in conjunction with other Japanese capitalists are to invest $6,000,000 in ceal mines in Szechuan, Shantung. Work will begin in the summer.

Semi-Official Mining Company to be Established to Work Coal in Saghalien.—The amount of coal deposit in Saghalien is calculated at 500 million tons at the least estimate. A semi-official corporation capitalized at 70 million yen to work the deposit will be organized. A bill regarding the scheme is expected to be introduced to the present session of the Diet.

Anglo-Chinese Mining Enterprise in Shansi.—It is reported that negotiations having been concluded between the mining bureau of Shansi and the Pekin syndicate for working coal mines in the province, the draft agreement in Chinese and English was forwarded to the ministry of agriculture and commerce, last Sunday, for official sanction.

China's Coal Production in 1920.—The total output of coal from different provinces of China in the year 1920 is figured approximately as more than 13,000,000 tons. Below is a list showing the coal production of the different provinces :

Province	Quantity		Quality
Manchuria ...	... 25,000	tons	bituminous
,,	... 1,000,000	,,	half-bituminous
Chili ...	... 40,000	,,	anthracite
,, ...	... 2,090,000	,,	bituminous
,, ...	... 150,000	,,	half-bituminous
Shansi ...	... 4,000,000	,,	anthracite
,, ...	... 25,000	,,	bituminous
Shensi ...	... 500,000	,,	,,
Kansu ...	... 500,000	,,	,,
Honan ...	... 1,000,000	,,	anthracite
Shantung	... 300,000	,,	,,
,,	... 500,000	,,	bituminous
Szechuan	... 500,000	,,	,,
Yuanan	... 300,000	,,	,,
Kweichow	... 250,000	,,	,,
Chekiang	... 10,000	,,	,,
Kiangsi ...	... 700,000	,,	,,
Kwangtung	... 50,000	,,	,,
Hunan ...	... 200,000	,,	Miscellaneous
Kwansi ...	... 100,000	,,	,,
other provinces...	100,000	,,	,,

Kai Lan Coal Mining Co.—The daily output of the Kai Lan Coal Mining Co., Chili, is at present approximately 12,000 tons of different kinds of coals.

Japanese Coal and Fuel Factory.—The Watachu Shoten Co., Ltd. was recently organized for the sale of coal and fuel. Office : 3 Ichizen

gashi, Kyoboshi-Ku, Tokyo. Representative: Mr. C. Watanabe.

Fuel and Oil Company, Tokyo.—The Fuji Shakai Co., Ltd. was recently organized for the sale of fuel and oil. Office: 5 Nichome, Imagawa Kaji, Kanda-ku, Tokyo. Representative: Mr. M. Horinchi.

WIRELESS

Proposed Wireless Telegraphy Stations, China.—The Peking government plans to establish wireless stations in Chefoo and Weihsien.

New Wireless Installation at Fuji Summit.—The plan of the national marine meteorological observatory of Kobe to erect a wireless building at a cost of Y.150,000 last year was delayed owing to general trade depression, but Minister Nakabashi and Governor Ariyashi of Osaka have collected the money for this purpose from the Osaka Shosen Kaisha, Nippon Yusen Kaisha, Uchida, Tatsuma and others, and the work has now started. A steel pole 300-ft. in height will be placed somewhere near the summit of Mount Fuji.

Powerful Wireless Station to be Established at Osaka.—The department of communications will establish a powerful wireless installation at Osaka at an expenditure of Y. 7,200,000, able to communicate with all the wireless stations in the world. The work is expected to be started during the spring.

American Federal Wireless Company.—A Peking message states that the American Federal Wireless Company signed on January 8 a contract to erect a powerful main wireless station at Shanghai, with sub-stations at Canton, Peking and Harbin, at a total cost of $4,200,000.

Chino - American Wireless Contract. — According to a Peking dispatch dated January 26, the wireless loan contract, provisionally signed between the department of communications and the American Wireless Co. on January 8, consists 20 main articles, and six additional ones. The gist of the contract is:

(1) The American Wireless Co. loans $4,600,000; (2) a 1,000 kilowatt station will be erected at Shanghai, enabling direct connection with stations throughout the world; (3) 600 kilowatt stations will be erected at Peking, Canton, Hankow and Harbin, capable of communicating with Japan, San Francisco, the Philippines and Singapore; (4) the government will repay one-tenth of the loan on December 31 of each year, total redemption being within ten years, paying 7 per cent. on the outstanding amounts; (5) if the total loan is not repaid after ten years, all the stations will become a joint Chino-American enterprise; (6) the Chinese government gives the wireless company full control over the stations during the ten years, but may superintend the stations, inspect all books, and train students at the stations. When the stations are turned over to the government the latter will employ the staff that was employed by the wireless company; (7) during the ten years of the company's control it will pay the government as royalty one-tenth of the revenue, irrespective of profits or losses; (8) the government will permit communication between the stations to be erected and stations in foreign countries and on vessels at sea, as well as stations within China.

In this connection, it is understood that the Japanese government will lodge a strong protest with China, since the contract contravenes the wireless contract concluded between the Chinese government and the Mitsui Bussan Kaisha some time ago.

ELECTRICAL ENTERPRISES

Tinghai Electric Plant.—Plans are being made for the enlargement of the electric light and power plant at Tinghai and new machinery will be ordered.

New Electrical Amalgamation, Tokyo.—The Tashin Electric Company and the Tokyo Electric Light Company were amalgamated some time ago, and are now amalgamating with the Meiji Hydro Electric Company, whose main office is at Osaka, and which has a capital of Y.3,500,000. This will take place on June 1.

Electrical Enterprise Co. at Tokyo.—The Sanko Company Ltd. was recently organized for the sale of electric and copper wires and electrical machinery. Office: 7 Nichome, Motosukiya-machi, Kyabashi-ku, Tokyo. Representative: Mr. Kanishi Suzuki.

New Formosan Electrical Enterprise.—The Taiwan Electric Industrial Co. has recently been established in Formosa with a capital of Y.6,000,000. The power house at Girankon will have a capacity of 14,950 horse power; electric power 8,479 Kw., to cost Y.4,000,000.

Kiangwan Electric Light Co.—The Kiangwan Electric Light Co., Paoshan, near Shanghai, was first established in January of 1918. For meeting the increased demand for electric light, the company has now increased its capital to fifty thousand dollars.

Electric Light and Power Plant.—The building of a Nantungchow electric light and power plant planned by Mr. Chang Chien and his brother is in progress and is expected to be completed in January, 1922. The cost of the machinery is estimated to be approximately $800,000.—*Chinese Press Report.*

TRAMWAYS

Tsinan Interurban Line.—As a famine relief measure, a roadbed for an interurban line between Tsinan and Lokow is being laid under the direction of the district magistrate. The project has been under way for some time but has not been developed because of a shortage of funds.

Tokyo Up-Town Tramways to be Double-tracked.—The Tokyo railway department is proposing to double-track the Yamanotó (up-town) tramways, commencing from the present fiscal year. It is expected that the work will occupy nine years, entailing an expenditure of Y.1,553,040,000.

Tramway to be Built at Chapei, Shanghai.—The Chinese Tramway Company at Nantao, Shanghai, is planning to build a tram line between Chapei and Nantao.

TELEPHONE

Military Phones between Canton and Shaohsing.—Military telephones have been installed by orders of Civil Governor Chen Ching-ming between Canton and Shaohsing.

Public Phone between Shanghai and Woosung.—It is proposed to start a public telephone service between Shanghai and Woosung.

Shanghai-Nanking Telephone Service.—Progress in connection with the establishment of a telephone service between Shanghai and Nanking and Hangchow is reported. Mr. Yih Mochuh, director of the telephone company, is said to have purchased a plot of land at the Great East Gate upon which the Shanghai headquarters will be constructed, at a cost of $130,000. It is expected that the building will be ready by the end of next month. The Nanking office is in course of construction, and may be ready by the end of May. The Hangchow headquarters have not yet been started on. Preparations have also been made for setting up telephone lines along the railways.

SHIPPING

Sino-Italian Navigation Co.—Wang Kuang-chi, minister to Rome, reports that he is organizing the Sino-Italian Navigation Co., that the Italian financiers are willing to advance on behalf of the Chinese shareholders ten million lire and that any deficit is to be made up by the Chinese themselves. The Chinese must undertake not to use this advance for any extraneous purpose.

Osaka Shosen Planning to Instal Coal-Dust Burners.—With a view to economizing coal, the Osaka Shosen Kaisha is planning to attach coal-dust burners to ships' engines. When the attachment is completed, it will be installed in 2,000-ton type ships first, and when the trial proves successful, it will be gradually applied to larger craft. The new arrangement, if it works well, will, it is believed, curtail fuel expense from 10 to 20 per cent.

AIRCRAFT

Aviation Station in Tsinan.—A tract of land between Kuanchiaying and Huangchiatun has been secured for the purpose of an aviation station in Tsinan. Tenders are being invited for the construction of the hangers.

Aeronautical Society Formed in Shanghai.—Shanghai residents are forming an aeronautical society with a qualified technical board with the object (1) of encouraging the development of aeronautics and (2) to undertake and control all flying competitions, sporting events and trials in Shanghai. The society will be affiliated to the International Aeronautical Association.

Peking-Shanghai Aerial Service.—It is now decided to inaugurate the aerial service between Peking and Shanghai from June 1 next. The passage fare will be $200 for one single ticket and the postage for every letter will be 18 cents.

Aviation Station in Tsinanfu.—The aviation department is going to erect landing grounds and aerodromes in Tsinanfu, the provincial capital of Shantung. Lands to the extent of 480 *mow* have been purchased by the deputies recently sent to investigate into the conditions of Tsinanfu. Merchants will be invited to build the required aviation station. It is anticipated that the aerial service between Peking and Tsinanfu will soon come to into existence. Offices for the aviation experts will also have to be built in Tsinanfu.

Japan Gets Airplanes—Vickers, Limited, at Barrow-in-Furness have completed a number of airships of the scout class for the Japanese government.

Lu Yung-ting to Buy Aeroplanes in Macao.—In answer to the request from War-lord Lu Yung-ting for the supply of aeroplanes, Peking has instructed Lu to buy them from the Portuguese merchants in Macao but the machines will be taken over by Peking after the expedition against Kwangtung has been completed.

Conclusion of Hydroplane Loan.—The *Shun Tien Shih Pao* is responsible for the report that the proposed hydroplane loan concluded between the ministry of navy and British firms Heng Ta-li (Vrard & Co. ?) and Chiao-chi Kungssu, the agreement having been signed on the 11th instant, and a sum of £400,000 having been handed over to the Chinese side. The amount of the loan is £897,200 for 105 hydroplanes and expenses of constructing aerodromes, with an additional sum of £400,000, totalling £1,297,200. Annual interest is 6 per cent., the loan to be redeemed in five years.

Big Aeroplane Factory to be Established at Nagoya—Mr. Winter representing Messrs. Armstrong & Co. of England is in Tokyo with nine mechanics specially selected by the British government, with a view to erecting the largest aeroplane factory in the Orient at Nagoya. Mitsubishi and other prominent Japanese firms are interested in the project. It is understood that the factory will turn out machines to be used for aerial mail service between Shanghai and Tokyo.

Compressed Air a Labor Saver

A FIELD for compressed air which is interesting is that where this agency is used to convey materials. Of all world problems none at present exceeds in importance the handling of raw products and manufactured goods. Although the first successful pneumatic grain-handling plant was constructed more than twenty-five years ago, real progress can be said to have been made in this direction only in recent years. One of the early drawbacks was the large consumption of power necessary in this practice. In the early days the pneumatic grain-elevating plants consumed energy at the rate of four horse power an hour per ton of grain. Even with this extravagant consumption of power, the method continued to be used, especially in European ports, where it was found to possess definite advantages over other mechanical means for unloading cargoes of grain.

The modern pneumatic grain conveyor will handle as many as three thousand bushels of wheat an hour, with a power consumption of very little more than one horse power per ton an hour. Pneumatic conveyors of this type are not suitable for all circumstances, and in some cases cannot compete with belt and bucket conveyors. This is especially true when the problem in hand is simply to convey a certain material from one definite point to another definite point. On the other hand, when a material must be gathered from a large area, as, for example, the hold of a ship or a storage floor, then the wages cost in bringing the material to a bucket elevator far outweighs the saving in power of the other types of mechanical conveyors. When pneumatic conveyors are employed in handling granular materials the suction nozzle of a pneumatic line can be brought to the material with practically no difficulty. It is further true that when the material must be conveyed across such obstacles as streets, creeks and railway tracks, the pneumatic conveyor offers definite advantages because of the ease with which a pipe line can be erected and supported.

One investigator found that the ratio of the average capacity to the maximum or nominal capacity is considerably higher with the pneumatic conveyor than with the bucket elevator. Thus, with one hundred tons per hour maximum capacity in each case, the pneumatic conveyor will unload a ship's cargo at an average over-all of seventy to seventy-five tons per hour, while the bucket elevator will not exceed fifty-five to sixty. In the case of waterborne materials this advantage is quite important, for it cuts down the time of unloading a ship, and therefore reduces demurrage and lost time in port. Pneumatic conveyors also afford dustless working conditions, and are independent of the state of the weather or tide.

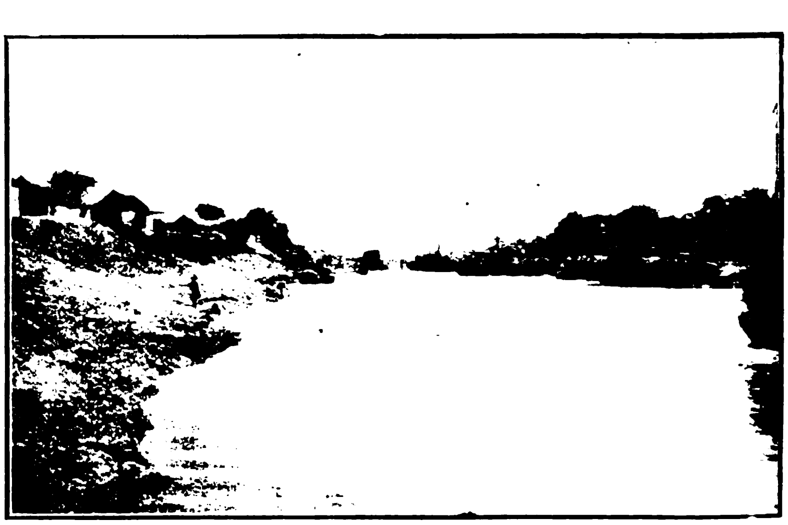
In the early days, when air was first used, either by suction or pressure, to carry materials through a pipe, the idea prevailed that a solid core of material should be carried through the pipe. In trying to accomplish this aim the power consumption was necessarily high. The latest plan, and one that gives much higher efficiency, is to convey a comparatively small core of material in a large stream of air. The conveying is effected through friction between the air and the skin of particles conveyed, and this friction results in an expansion of the air. In pneumatic transport of materials it is necessary to keep the conveyor lines as straight as possible, because bends hinder the flow of the material along the pipe and thereby increase the power consumption. In a well-planned system the transport line can be moved as a whole, either horizontally or vertically, so as to enable the nozzle to reach a large surface of the material and yet retain a straight transport line. There are now a number of special forms of nozzle which can be used advantageously in awkward positions, such as corners of a ship's hold.

The usual form of pneumatic conveyor will lift material forty or fifty feet vertically and carry it an equal distance horizontally. Some special conveyor designs, however, have a much greater range of action. A conveying system at one of the Canadian ports lifts material ninety feet and carries it seven hundred feet horizontally. This plant has handled forty-eight hundred bushels of oats per hour, discharging, and more than six thousand bushels, loading. The operation of loading, of course, is accomplished by simply reversing the air current. The horse power consumed on this long line averages about two per ton per hour. Only four men are required to operate the entire plant. Three or four times that many would be needed with any other practical conveying system.

The use of the pneumatic method in conveying and placing concrete for viaducts and piers is rapidly coming into general favor. In one case where this scheme was used the result was a saving of forty per cent. in labor. The plan increases materially the rate of placing concrete and eliminates the use of cableways, derricks, towers and cars. The same method is employed in conveying and placing concrete in large railroad tunnels, as well as in small-bore tunnels designed to carry lines of pipe and the like. In this scheme the concrete is mixed in batches and then transported to its final resting place by means of compressed air acting through pipe lines. In one case concrete was conveyed four thousand feet by this method. It should be stated, however, that conveyance for such a long distance is uneconomical except under unusual conditions. Pneumatic concrete conveyors possess real advantages in cases where the forms are difficult of access, for by this method the concrete can be deposited wherever it is possible to lay a pipe line. In one recent case, where the job in hand was the building of a pier, a pneumatic concrete-conveying installation reduced the concreting gang from twenty men to six. It was also found that the pneumatic method speeded up the job and enabled the contractor to complete work in record time. Modern machines of this kind will place concrete at the rate of forty or fifty cubic yards per hour.

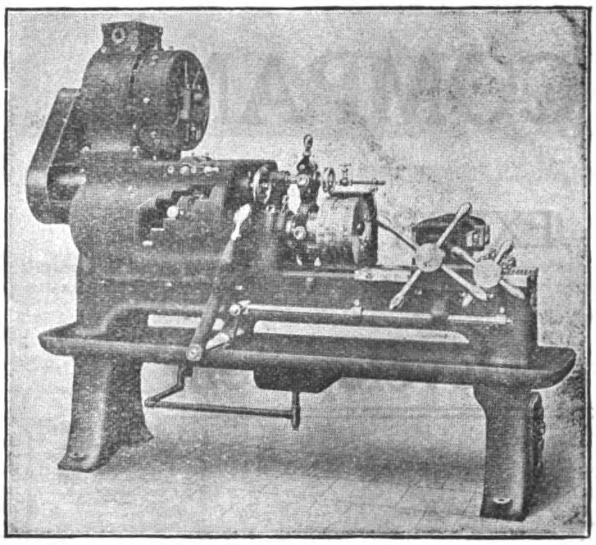
Another growing use for compressed air is in cleaning the fronts of city buildings. In this plan a blast of sand is directed against the surface of the building, with the result that the building front is cleaned more quickly and at less cost than by hand washing. In San Francisco one company met with much success recently in the employment of a sand blast for chipping paint and rust from the interior and exterior of steel ships. Two men directing two streams of sand against the steel accomplished the same work that formerly required forty men to perform by the use of hammers for chipping. It is stated further that the sand blast did a much better job. In this particular case, after the sand blast had completed its work, the same pneumatic plant, with slight alterations, was used to apply a coating of paint to the cleaned surfaces of the ships.

One of the newest applications of sand blasting is in cleaning the pistons of automobile engines. One machine for this purpose uses a blast carrying steel grit or shot.



The Grand Canal

Heap's Automatic Screwing Machines



Arranged for Direct Motor Drive.

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When desired they can be fitted with an All-Gear Head instead of the usual Cone Pulley. The drive can then be by Electric Motor as illustrated, or by Constant Speed Belt.

All these machines are fitted with our Patent Steel Head, which is the most simple and only mechanical Die-head on the market. Springs, with their attendant troubles or other delicate mechanisms, which can get clogged with dirt and the swarf inseparable from a Screwing Machine, do not enter into its construction in any way.

The Die-head opens automatically and the return motion of the carriage closes it ready for the next piece. There are no other levers to set.

If you have threading work to deal with send us particulars and we will offer you a suitable machine.

Copy of Catalogue will be posted free on request to all responsible firms.

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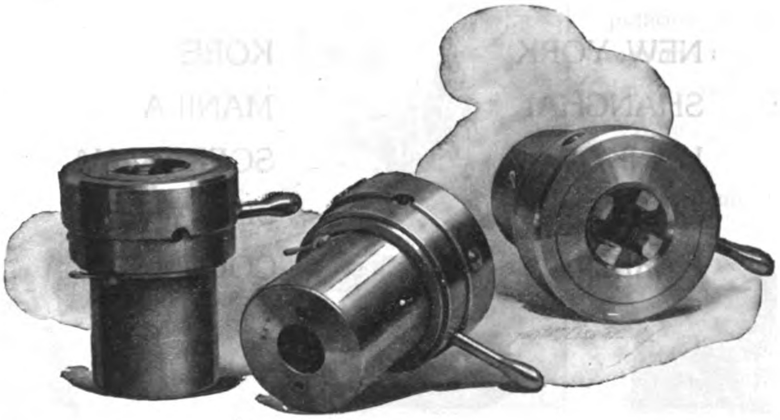
THE NO. 4 HARTNESS AUTOMATIC DIE.

This die has a wide range covering standard threads from ¼ inch to 1¼ inches diameter.



It will safely cut threads as fine as 32 per inch on all diameters within its range.

It is provided with roughing attachment which may be set to give roughing and finishing cuts without disturbing the finish diameter. This die is suitable for general turret lathe and screw machine use. It is especially adapted for use in automatic screw machines, owing to the compactness of its design.

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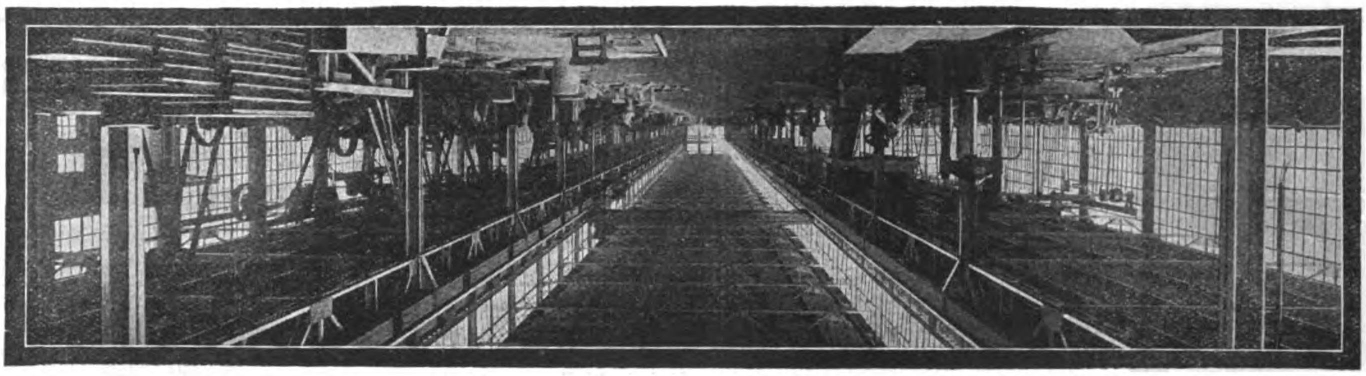

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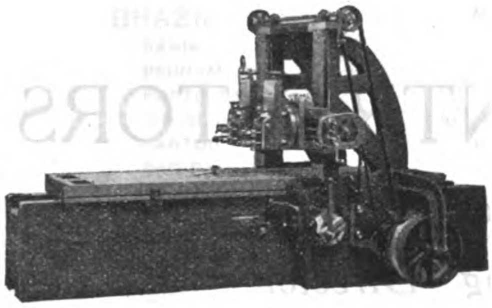
Made in sizes from 20" × 17" to 36" × 36"



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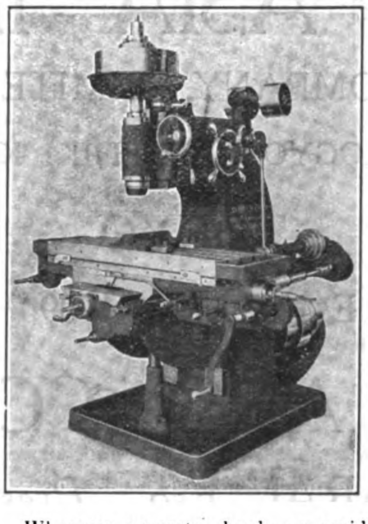

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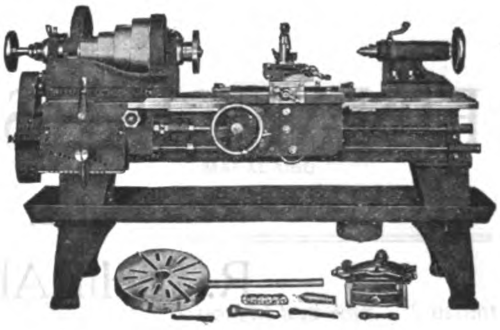

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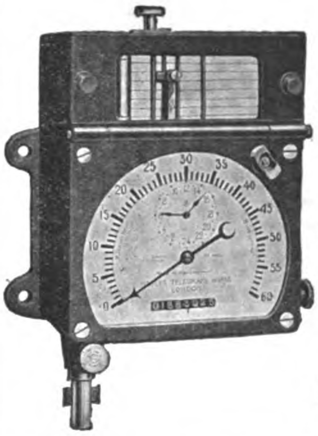

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WITH CONJUGATE MOVEMENT

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INDICATES:—Speed.
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Time of Day in Hours and Minutes.
RECORDS:—Speed attained at any point of run.
Time the engine or coach is at work.
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Time of Day in Hours and Minutes.
If desired apparatus to record working of Westinghouse or Vacuum Brakes.

HASLER TYPE

Chart Feed on a Time Basis of 4 m/m per Minute.

INDICATES:—Speed.
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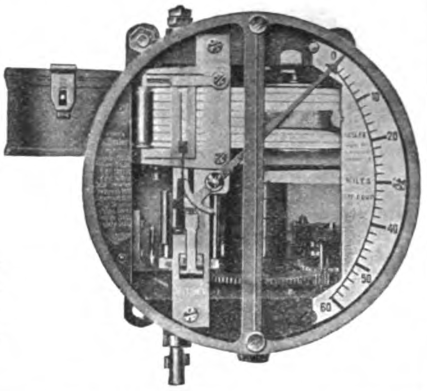
Distance covered.
Duration and point of stops.
If desired bell can be fitted to ring at predetermined speed, or apparatus to record working of Westinghouse or Vacuum Brakes.



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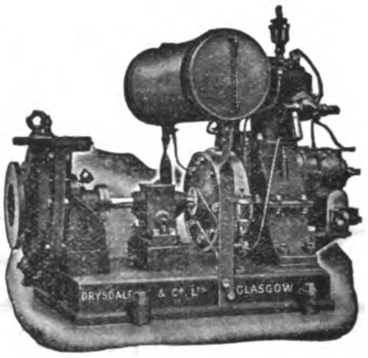

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R. SHIRAIWA, Esq., *Managing Director*

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Paid-up Capital . . . . . . „ 11,500,000

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International Banking Corporation

CAPITAL AND SURPLUS: G.$10,000,000 UNDIVIDED PROFITS: G.$3,200,000

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N. S. MARSHALL, *Manager.*

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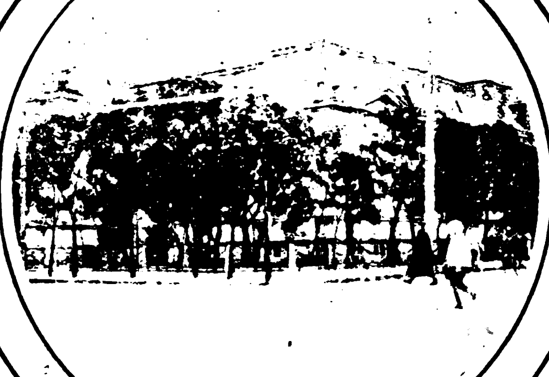
BRITISH HONDURAS—Belize.

CAPITAL PAID UP & RESERVES	$40.000.000
TOTAL RESOURCES OVER - -	$600,000,000



THE

BANK OF TAIWAN LTD.

INCORPORATED BY SPECIAL IMPERIAL CHARTER, 1899

Capital Subscribed - - - - - -	Yen 60,000,000
Capital Paid-up - - - - - - -	,, 45,000,000
Reserve Funds - - - - - - -	,, 9,680,000

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DIRECTORS:

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GUNJI KAWASAKI, Esq. MASUMI ESAKI, Esq.
TADASU HISAMUNE, Esq.

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CAPITAL SUBSCRIBED - - - - - - - -	„ 150,000,000
CAPITAL PAID-UP - - - - - - - - -	„ 75,000,000
RESERVES - - - - - - - - - - - -	„ 40,000,000

One-third of the Capital, i.e., Francs 50,000,000, subscribed by

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***General Manager*: A. J. PERNOTTE**

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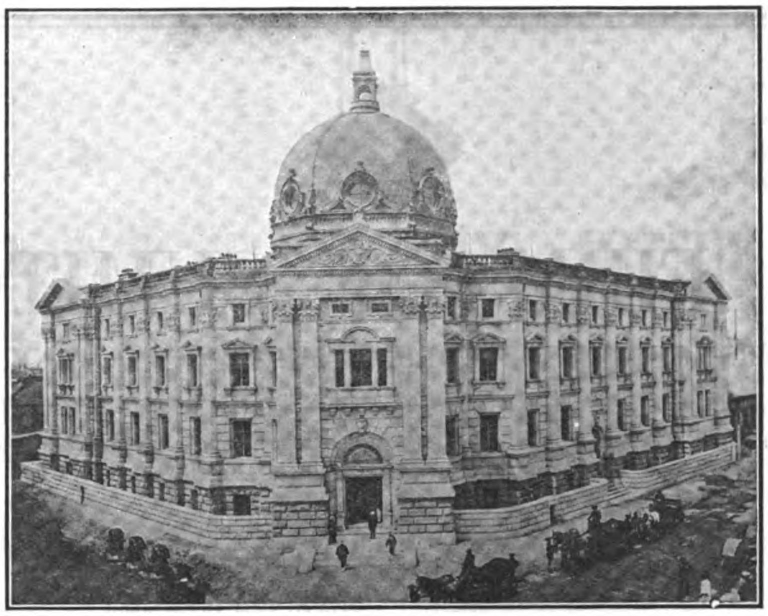

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The Sumitomo Yoko...	Tientsin
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The Sumitomo Bank of Seattle ...	Seattle

THE SUMITOMO STEEL WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of every description for Railways, Shipbuilding Yards, Mines, Hydraulic, Electric and other Engineering Works, etc. etc.

THE SUMITOMO BANK, LIMITED

OSAKA, JAPAN

Cable Address: "SUMITBANK"

President: Baron K. SUMITOMO

Capital Subscribed ...	Yen 70,000,000	Reserve Fund ...	Yen 12,000,000
Capital Paid-up ...	„ 40,000,000	Deposits (30th June, 1920) ...	„ 360,000,000

HOME BRANCHES:

Tokyo, Yokohama, Nagoya, Kyoto, Kobe, Hyogo, Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Kokura, Wakamatsu, Hakata, Kurume.

FOREIGN OFFICES:

New York, San Francisco, Shanghai, Hankow, Bombay, London, Seattle (Affiliated Bank), Hawaii (Affiliated Bank).

AGENTS:

National City Bank of New York, New York. Lloyds Bank Ltd., London.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.

THE

MITSUBISHI BANK,

LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku,
Tokyo, Japan.

BRANCH OFFICES:

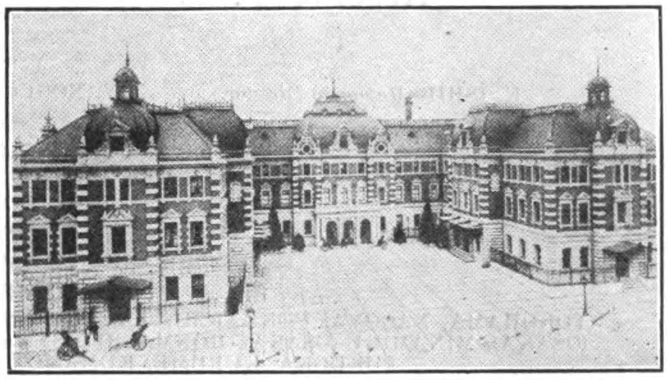
Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1680



Capital Subscribed... ....Y. 100,000,000.00
Capital Paid-Up.....................Y. 60,000,000.00
Reserve Fund (Jan. 1921)......Y. 27,000,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku,
TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

MORINOSUKE MITSUI, Esq., TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

OTARU, FUKAGAWA (Tokyo), HAKOZAKI (Tokyo), YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London: Barclays Bank, Ltd.
London Joint City & Midland Bank, Ltd.
New York: The National City Bank of New York.
The Chase National Bank.
Bankers Trust Co.
Paris: Banque de l'Union Parisienne.
Comptoir National d'Escompte de Paris.
Bombay: National Bank of India, Ltd.

THE DAI-ICHI GINKO, LTD.

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Subscribed Capital	- - -	**Yen 50,000,000.00**
Paid-Up Capital	- - - -	**Yen 29,525,000.00**
Reserve Fund	- - - -	**Yen 28,000,000.00**

Y. SASAKI, *President*

K. ISHII, *Managing Director.* Y. NOGUCHI, *Managing Director.* S. SUGITA, *Managing Director.*

HEAD OFFICE:
No. 1 KABUTO-CHO, NIHONBASHI-KU, TOKYO.
T. AKASHI, *Manager*

CITY BRANCHES:
ISECHO, SHIN-OSAKACHO, FUKAGAWA, MARUNOUCHI.

HOME BRANCHES:
YOKOHAMA, NAGOYA, YOKKAICHI, KYOTO, NISHIJIN (KYOTO), GOJO (KYOTO), FUSHIMI, OSAKA, NISHIKU (OSAKA), MINAMIKU (OSAKA), HONMACHI (OSAKA), KOBE, HYOGO, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, MURORAN.

BRANCHES IN COREA:
SEOUL, FUSAN.

LONDON & NEW YORK BANKERS:

London: London County Westminster & Parr's Bank, Ltd.; The London Joint City & Midland Bank, Ltd.; The Yokohama Specie Bank, Ltd.

New York: The National City Bank of New York.; The National Bank of Commerce in New York.; The Yokohama Specie Bank, Ltd.

CORRESPONDENTS:
The Bank, in addition to its own Branches, has numerous Agencies or Correspondents in the principal Cities and Towns at Home and Abroad.

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Capital fully paid up	**P. 6,750,000.00**
Reserve funds	**P. 4,900,000.00**

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

LONDON: National Bank of Scotland, Ltd.
SPAIN: Banco Hispano-Americano
HONGKONG: Netherland India Commercial Bank
SAN FRANCISCO: Wells Fargo Nevada National Bank
NEW YORK: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.

PARIS: Comptoir National d'Escompte
AUSTRALIA: Bank of New South Wales
SHANGHAI: Bank of Canton, Ltd.
CHICAGO: Continental & Commercial National Bank
JAPAN: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, *President*
No. 10 PLAZA DE CERVANTES, MANILA, P. I.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	$15,000,000
Reserve Funds: Sterling	£2,500,000
Silver	$21,500,000
Reserve Liability of Proprietors	$15,500,000

Court of Directors:

G. T. M. EDKINS, Esq.
Chairman

G. M. DODWELL, Esq.
Deputy Chairman

A. H. COMPTON, Esq.,
A. S. GUBBAY, Esq.
Hon. Mr. P. H. HOLYOAK
Hon. Mr. J. JOHNSTONE
A. O. LANG, Esq.
Hon. Mr. E. V. D. PARR,
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . A. G. STEPHEN

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY, BANGKOK, BATAVIA, BOMBAY, CALCUTTA, CANTON, COLOMBO, FOOCHOW, HANKOW, HARBIN, ILOILO, IPOH, JOHORE, KOBE, KUALA LUMPUR, LONDON, LYONS, MALACCA, MANILA, NAGASAKI, NEW YORK, PEKING, PENANG, RANGOON, SAIGON, S. FRANCISCO, SHANGHAI, SINGAPORE, SOURABAYA, TIENTSIN, TSINGTAO, VLADIVOSTOCK, YOKOHAMA

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

Managing-Directors:
YUTSUHA SATO, Esq. KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
MARQUIS YORIMICHI TOKUGAWA
VISCOUNT YUKIYOSHI AOYAMA
HON. NAGAYUKI ASANO
YOSHITERU SHIMIZU, Esq.
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
BARON MICHITOMO IWAKURA
NAOYOSHI YAMAMOTO, Esq.
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

Head Office Manager: **Kiyosumu Tanikawa, Esq.**

LONDON BANKS AND AGENTS:

LAZARD BROTHERS & CO., LTD. UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINISTER AND PARR'S BANK, LTD.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED - - - - - -	Yen 50,000,000
CAPITAL PAID-UP - - - - - - -	Yen 45,000,000

HEAD OFFICE:
MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:
TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
Y. ONO, Esq., Vice-President
K. IYANAGA, Esq., Director
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:
NAGATANE SOMA, Esq.
KINTARO HATTORI, Esq.
KINICHI KAWAKAMI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City
Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

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LEEDS, ENGLAND

HYDRAULIC ENGINEERING

SPECIALISTS,

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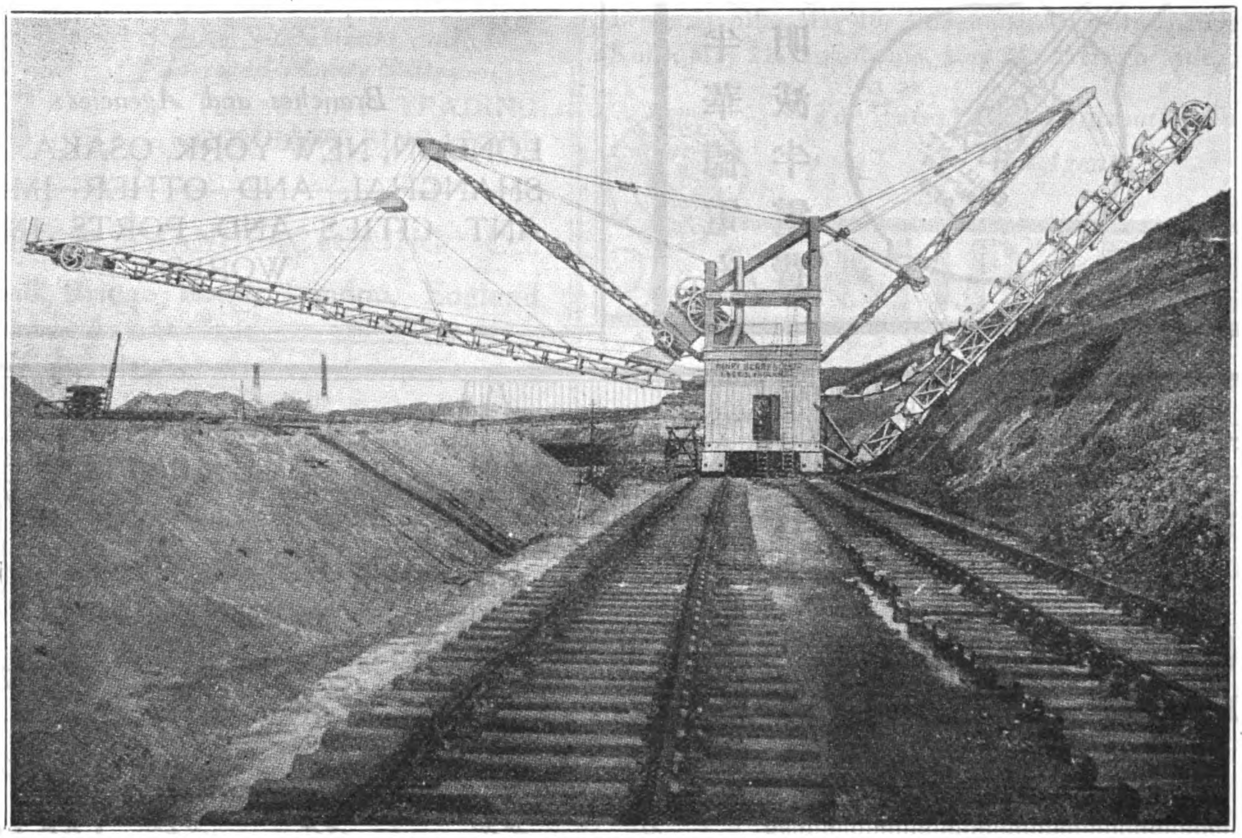

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give MORE LIGHT, BETTER LIGHT
at LESS COST than any vacuum lamp.

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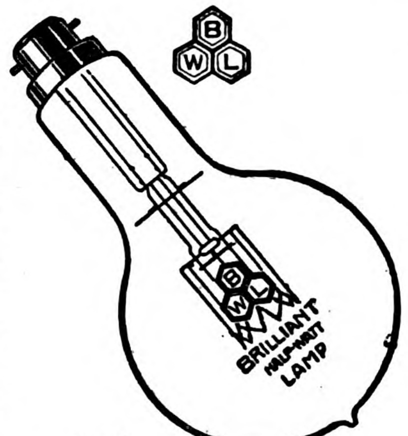

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MITSUBISHI MARINE & FIRE INSURANCE Co., Ltd.

MITSUBISHI KAIJO KASAI HOKEN
K. KAISHA

Head Office:
MARUNOUCHI, TOKYO

Subscribed Capital - -	Yen 5,000.000
Paid-up Capital - - -	„ 1,250.000

Branches and Agencies:

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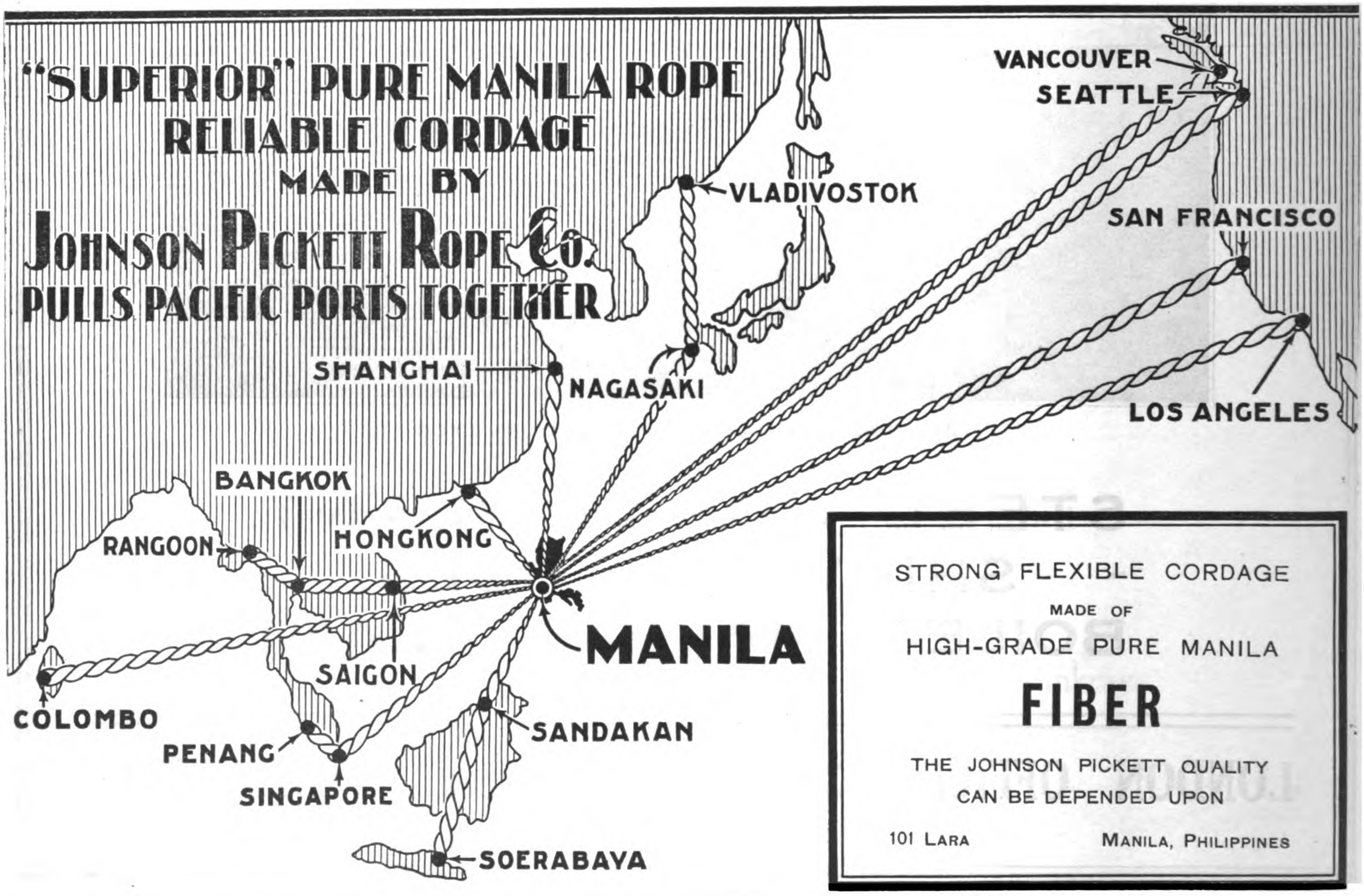

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SPARKING PLUGS

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ALL CARS

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Kishore, CALCUTTA

Burma—
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RANGOON

Straits Settlements and Federated Malay States—
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COMPANY, SINGAPORE

THE HOBSON MANUFACTURING CO.
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AMERICAN
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PASSENGERS-FREIGHT

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ANNOUNCING the first sailing from Oriental Ports of the s.s. WENATCHEE, first of the new 535-ft. type of passenger vessels.

Leave Manila, May 10; Hongkong, May 14; Shanghai, May 17; Kobe, May 21; Yokohama, May 24: Arrive Seattle, June 3.

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UNION INSURANCE SOCIETY OF CANTON, LIMITED

(Incorporated in Hongkong)

With which are amalgamated

BRITISH TRADERS' INSURANCE COMPANY, LTD.

AND

THE CHINA FIRE INSURANCE COMPANY, LTD.

(Both incorporated in Hongkong)

JOINT ASSETS EXCEED $30,000,000

HEAD OFFICE:	HONGKONG
LONDON BRANCH:	9 Royal Exchange, E.C.
LONDON FIRE OFFICE:	10 George Yard, E.C.

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Marine, Fire, Accident, Motor Car, Burglary, Guarantee, Workman's Compensation, and all other classes of Insurance, except Life.

C. MONTAGUE EDE,
General Manager.

A Real Machine Tool

This Wall Radial Drill is a real machine tool in every sense of the word. It is properly designed and carefully constructed of the finest materials obtainable. Every feature has been added to insure ease of operation and accurate output. Your factory walls from the column of this machine and it proves as rigid under strain as any machine on the floor.

You save in first cost, floor space and operating time by insisting on L-F Wall Radial Drills.

Get the full details from bulletin. They make interesting reading.

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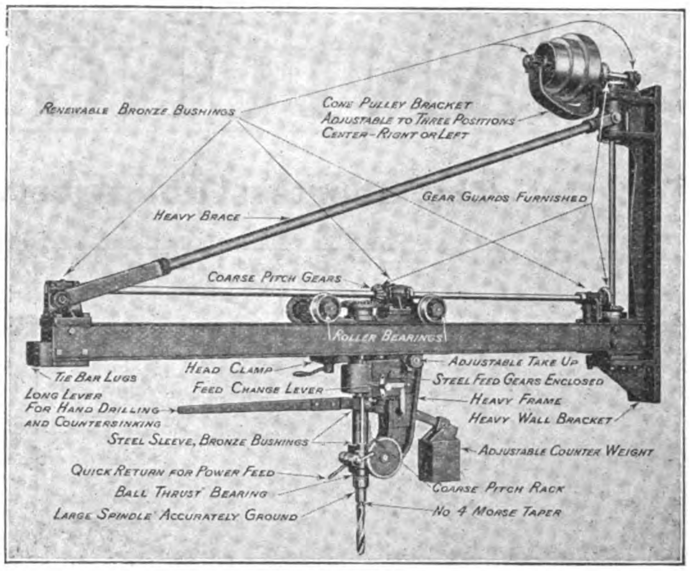


LYND-FARQUHAR CO.

Machine Tools of Quality.

419-425 ATLANTIC AVE.,

Boston 9, Mass., U.S.A.

MADE IN FOUR STANDARD SIZES

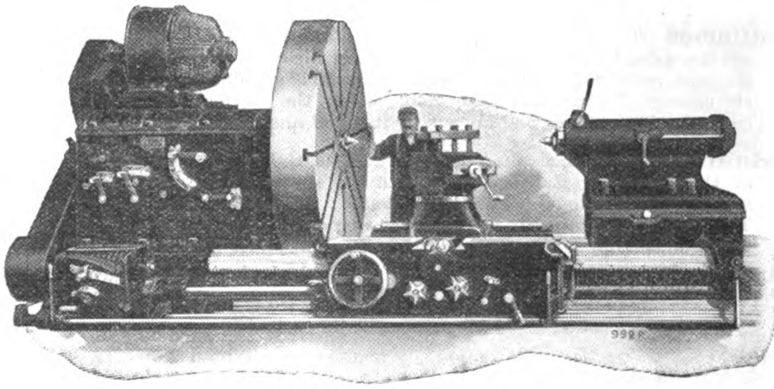
Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.

BETTS-BRIDGEFORD HEAVY DUTY GEARED HEAD ENGINE LATHE

Lathes were among the earliest machine tools invented. As matters progressed great changes were effected in both construction and principles of operation. As units for machining became larger many methods had to be discarded. Then came the Great War that demanded the best that was in men and machines. This was the War of the Machine works. Betts Heavy Duty Lathes were in demand because their construction allowed for accuracy in handling larger units with the least time and trouble.

Used in all machine works where heavy duty machine work is done such as railroad works, steel mills, shipyards, forge works, etc. Of interest to all the above.



Geared Head Lathe.

Made in a complete range of sizes in both heavy duty and extra heavy patterns from 26″ swing or 13″ Height of centers, to 72″ Swing or 36″ Height of centers.

A Betts Machine Tool for every need in heavy duty work. Let us have your problems.

Engine Lathes, Axle Lathes, Journal Trueing Lathes, Vertical Boring and Turning Mills, Tire Turning and Boring Mills, Horizontal Boring Machines, Planing Machines, Slotting Machines, Multiple Spindle Milling Machines and Munition Manufacturing Machines.

BETTS MACHINE COMPANY

405 WINTON ROAD, ROCHESTER NEW YORK, U. S. A.

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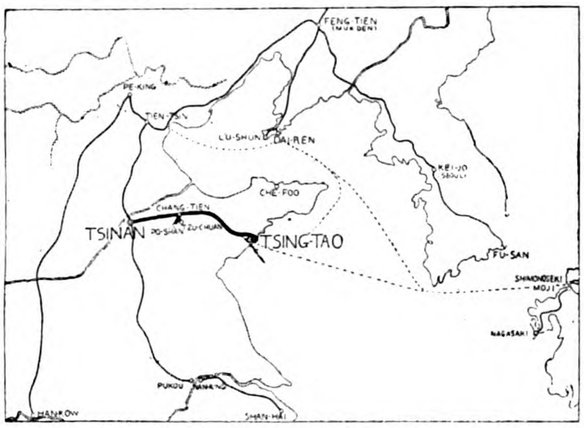
Established in 1861

ANDERSEN, MEYER & CO., LTD., Shanghai, China

Exclusive Representatives for China and Manchuria

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.

At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1	leaves Tsingtao	daily 8.00 a.m.	arrives Tsinan	6.30 p.m.
Train No. 3	leaves Tsingtao	daily 7.00 p.m.	arrives Tsinan	7.00 a.m.
Train No. 2	leaves Tsinan	daily 9.00 a.m.	arrives Tsingtao	7.30 p.m.
Train No. 4	leaves Tsinan	daily 9.30 p.m.	arrives Tsingtao	9.10 a.m.

Local Trains run between Tsingtao and Kaohi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

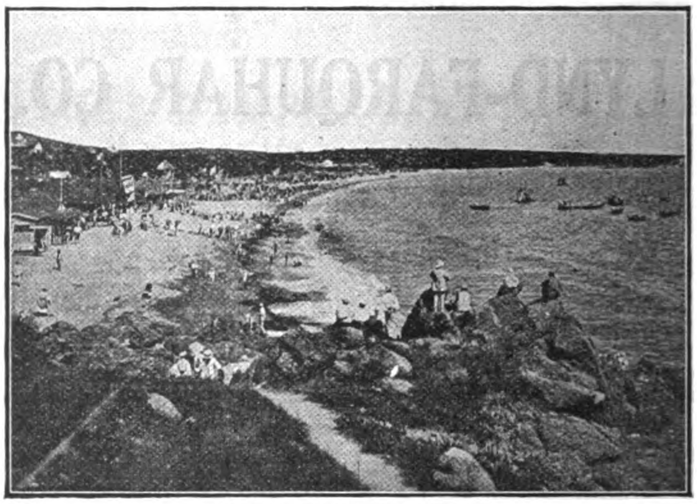
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.43 & 10.21 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.

THE GREAT HARBOUR, TSINGTAO

For Further Information, please apply to

THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA?
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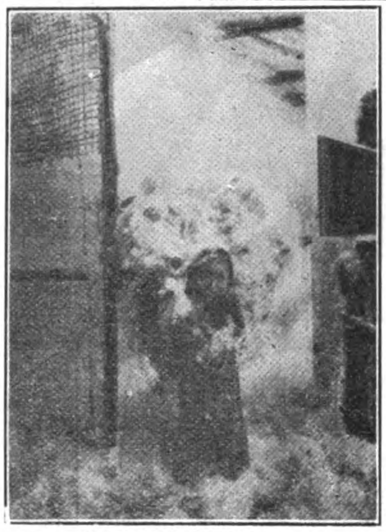
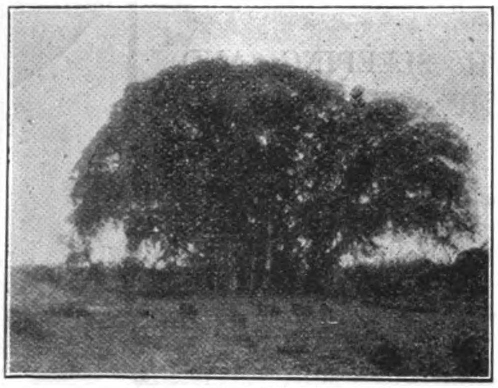
Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.



Girl Carrying Capoc.



Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

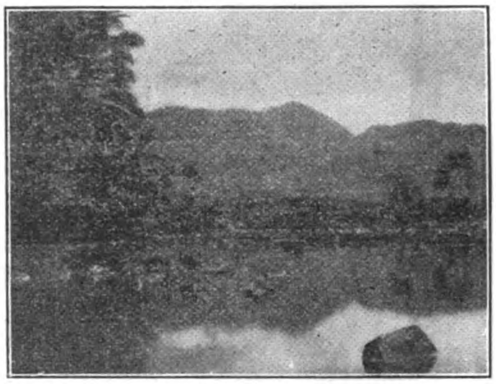
And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

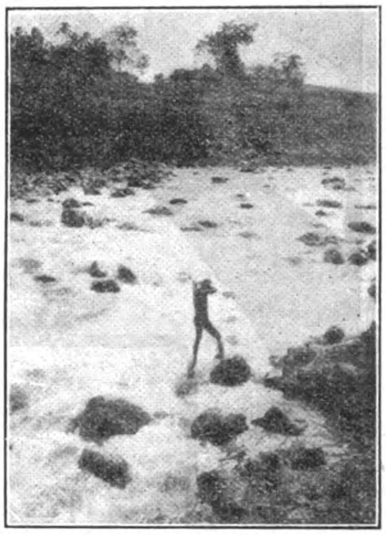
THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.



Pond in the Neighborhood of Garoet.



River Brantas, Malang.

Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

The photographs in this advertisement are from "The Joint-Stock Co., Photographer's Studio, Kurkdjian, Soerabaia."

JAPANESE GOVERNMENT RAILWAYS

THOROUGHLY EQUIPPED LINES REACH EVERY PLEASURE RESORT AND BUSINESS POINT

Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes

WELL-FURNISHED PASSENGER CARS WITH SLEEPING AND DINING ACCOMMODATION ON THROUGH TRAINS AND EXPRESSES

OFFICIAL GUIDE TO EASTERN ASIA

1st Vol.	Manchuria and Chosen	Y. 7.00	Sold at Kelly & Walsh (Yokohama, Shanghai)
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THROUGH BOOKING TO AND FROM
CHINA
Single and Return Tickets between China and Japan via Chosen
Period of Validity: Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets
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Period of Validity: Two months. Reduction: 25%-50% for 10 or more passengers
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China-Japan Parcel Through Traffic
Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates
FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC BUREAU, DEPARTMENT OF RAILWAYS,
TOKYO

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

MIIKE COAL

The Finest Steaming and Bunker Coals of the Far East are mined from the famed Miike, Tagawa, Yamano, Sunakawa and Kawakami Collieries operated by the

MITSUI

MINING COMPANY, LTD.

HEAD OFFICE:
No. 1 Surugacho, Nihonbashi-Ku,
TOKYO, JAPAN

Capital - - Yen 100,000,000

Annual Coal Output is equal to one-quarter of Total Japanese Mines.

LEAD, SILVER, GOLD, ZINC, COPPER, SPELTER, SULPHUR, COKE, IRON, CHEMICALS and DYES

Are produced from the Company's, KAMIOKA, Lead, Silver and Zinc Mine; SANO, Copper and Zinc Mine; KUSHIKINO, Gold Mine; KONGO, Tungsten Mine; IWAONOBORI, Sulphur and Metal Mine; Zinc Plants, Coke, Dyestuffs and By-products Establishments in Miike.

Sole Agents for our Products:

MITSUI BUSSAN KAISHA, Ltd.

(MITSUI & Co., Ltd.)

Tokyo, London, New York, Shanghai, Hongkong, and other Principal Commercial Centres of the World.

Cable Address:
"IWASAKISAL-
TOKYO"

Code Used:
A. 1., A.B.C. 5th, Western
Union, Bentley's Complete
Phrase

MITSUBISHI SHOJI KAISHA, LD.

(MITSUBISHI TRADING CO., LTD.)

Capital, fully paid-up - - - Y. 15,000,000

***Head Office*:**
MARUNOUCHI, TOKYO.

Importers and Exporters, Manufacturers, Commission Merchants, Brokers, Ship Owners.

EXPORTING:

Coal, Copper and all Other Descriptions of Metals, Minerals and Cereals, Chemicals, Oil, Paper, Glass, Canned Fish, Silk Goods, and General Oriental Products and Merchandise

---

IMPORTING:

Iron, Steel, Machinery, Machine Tools, Chemicals, and General Merchandise

---

ANNUAL PRODUCTION:

Electrolytic Copper Ingots	20,000	Tons
Pig Iron	100,000	,,
Steel	50,000	,,
Coal	3,500,000	,,

COLLIERIES:

Takashima, Ochi, Yoshinotani, Kishidake, Namazuta, Shinnew, Hojo, Kanada, Kamiyamada, Ashibetsu, Bibai, O-Yubari, and Sakito

---

BRANCHES and AGENCIES:

Tokyo, Yokohama, Nagoya, Osaka, Kobe, Moji, Wakamatsu, Karatsu, Nagasaki, Otaru, Tsuruga, Kure, Muroran, Hakodate, Kushiro, Vladivostok, Dairen, Kirin, Harbin, Peking, Shanghai, Hankow, Hongkong, Canton, Tientsin, Tsingtao, Tsinan, Singapore, London, Paris, Lyon, Marseilles, Berlin, New York, Seattle.

STEAMSHIP DEPARTMENT—KOBE

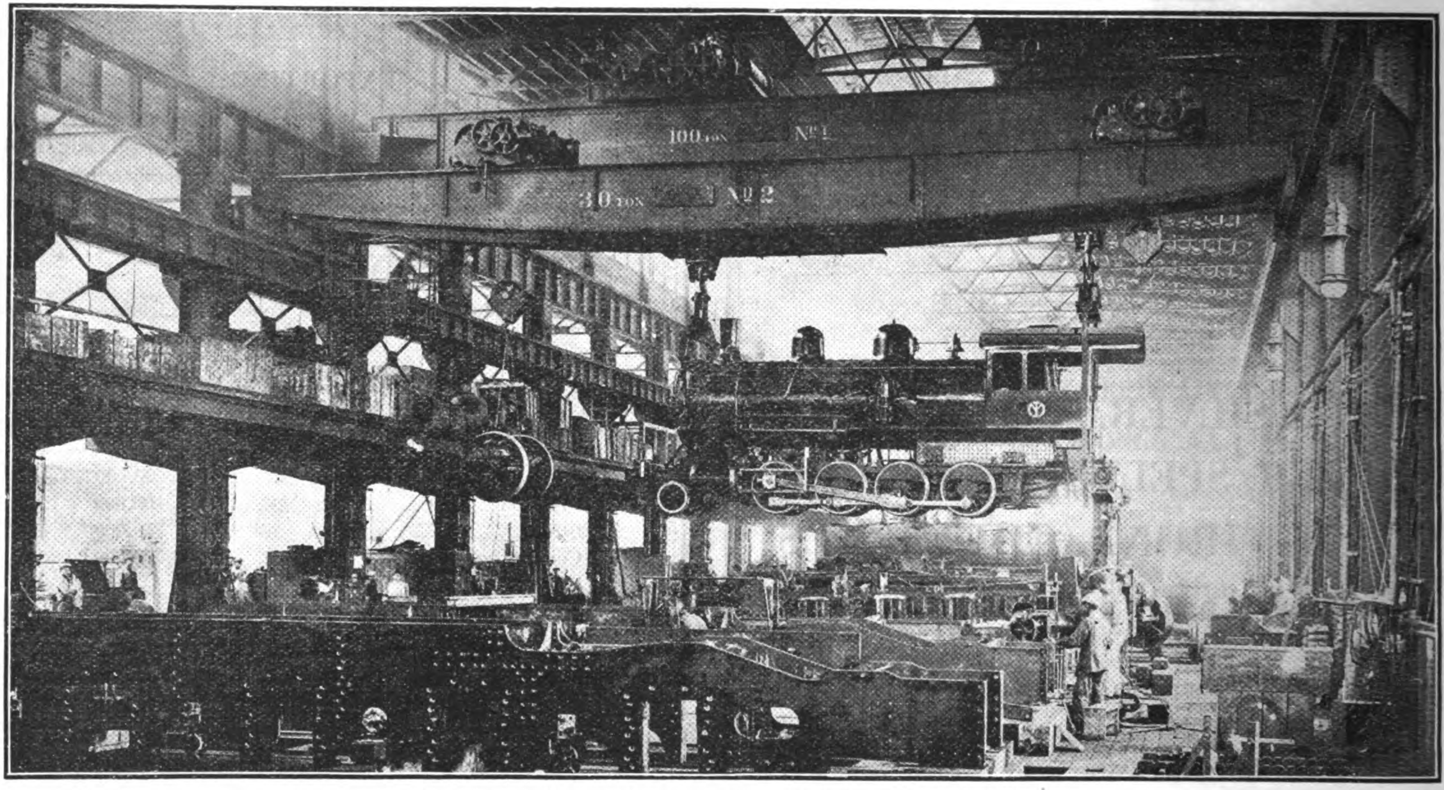
Fleet Owned	25,000	Tons Gross
Chartered Steamers	12,000	,, ,,

Regular and Irregular Routes between home ports and Chinese and South Sea Islands Ports, etc.

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

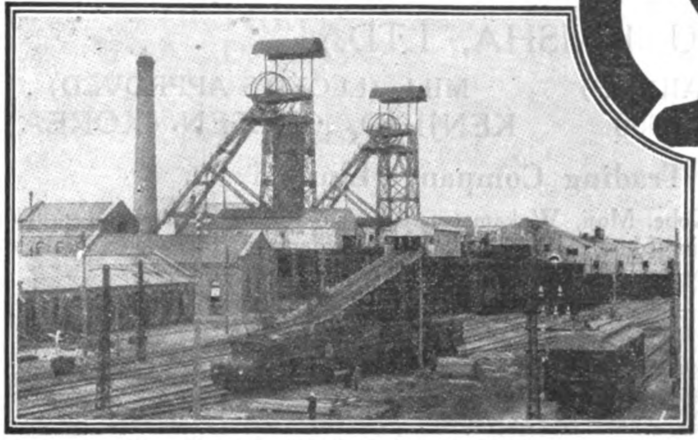
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

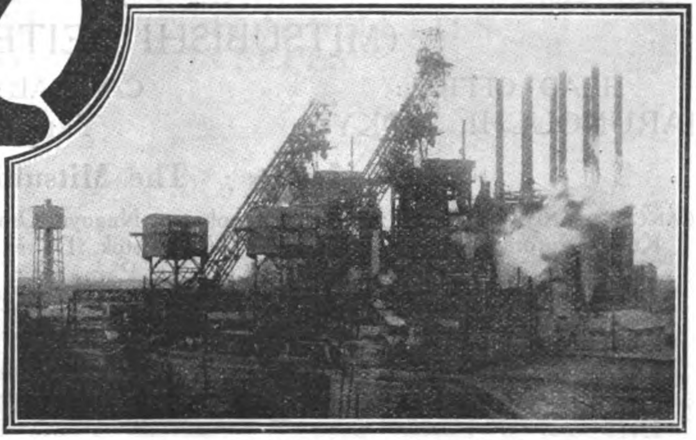
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

Dairen (Yingkou), Port Arthur, Tientsin, Newchwang, Tsingtao

Agencies:

Chefoo, Manila, Hongkong, Sourabaya, Singapore, Penang, Takao (Formosa), Batavia, Yokohama, South Seas, Niigata, Osaka, Nagoya, Shanghai, Moji, Saigon, etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,

South Manchuria Railway Company, Dairen

ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

BUT THE TWAIN HAS MET AND BLENDED HERE

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PIG IRON PLATES AND SECTIONS

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(MITSUBISHI SEITETSU KAISHA, LTD.)

HEAD OFFICE: MARUNOUCHI, TOKYO

CAPITAL: (PAID UP) YEN 30,000,000

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Christiana
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Portland, Ore.
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DAMASKS	TOWELING	CREPES

ETC. ETC.

PONGEES	BROCADES	SATINS
CREPES	SILKS	

FUJI GASSED SPINNING COMPANY, LIMITED

(FUJI GASU BOSEKI KABUSHIKI KAISHA)

Head Office:
GOCHOME, OSHIMA-MACHI
NEAR TOKYO
CABLE ADDRESS: "FUHO"

CAPITAL - - Yen 38,000,000
OPERATING
450,000 Spindles and
1,775 Looms

Business Office:
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NIHONBASHI-KU,
TOKYO

Silks, Crepes, Brocades, Cotton Cloths, Muslins

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IS REPRESENTED IN ALL THE IMPORTANT COMMERCIAL CENTERS OF THE WORLD AND CAN FURNISH PROMPTLY FULL INFORMATION AND QUOTATIONS REGARDING THE LARGE VARIETY OF TEXTILES MADE IN OUR MILLS

KANEGAFUCHI SPINNING COMPANY, LIMITED

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Trade Mark

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SUGAR

RAW, REFINED AND IN CUBES

FINEST **ALCOHOL** QUALITY

Formosa Sugar Manufacturing Co., Ltd.

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THE LARGEST SUGAR PRODUCERS IN ASIA

Operating the modern Mills with a grinding capacity of 7,800 tons of cane per day and two Alcohol Distilleries in Formosa, also Sugar Refinery in Kobe.

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Tokyo, London, New York, Lyon, etc,

TRADE MARK

CABLE ADDRESS: "SUGAR," TOKYO
CODE: A.B.C. 5TH EDITION
Head Office:
No. 12 Sanchome, Kakigara-Cho,
Nihonbashi-Ku, TOKYO

RAW SUGAR REFINED

THE JAPAN SUGAR CO., LTD.
(DAI NIPPON SEITO KABUSHIKI KAISHA)
CAPITAL: YEN 18,000,000; PAID-UP: YEN 12,000,000

TRADE MARK

HIGH SPEED PRODUCTION

Last month and the month before we showed you the work BLISS No. 18 inclinable presses were doing for the Griest Manufacturing Company of New Haven, Conn., U.S.A. We now call your attention to a No. 1 BLISS Stiles Type Press, in this same plant, equipped with automatic device for rapid production, punching pendulums out of 0.015 stock carbon steel at the rate of 55,000 in 9½ hours. Installed ten years ago, this press has given first-class service ever since.

There's a BLISS Press for every purpose. Write us, in full detail, of *your* particular needs (send sample, detailed drawing or blue-print ; specify material, rate of production, etc.) and we will tell you just what BLISS Equipment you should have.

E. W. BLISS & COMPANY

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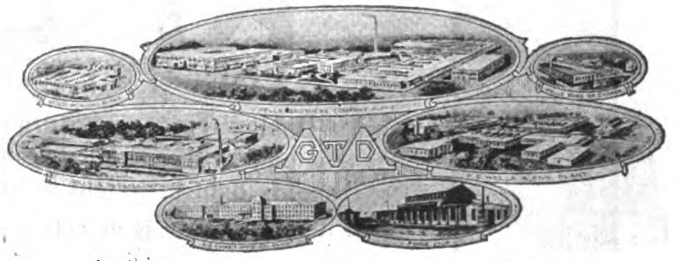
You need these tools from GTD



Plants of GTD Corporation, World's Largest Manufacturers of Screw-threading Tools

1

2

3

1 The GTD Opening Die Stock is a hand tool which cuts an unusually accurate thread and requires slight effort to operate. After the thread is cut the die may be released, and pulled straight off the work. No time wasted in unwinding. Furnished to cut either Whitworth or USS threads.

2 *"Little Giant"* screw-plates contain assortments of tools for cutting screw-threads by hand:—taps, dies, die stocks and tap wrenches. Made by GTD in assortments suitable for every threading need. Look for the brand names, *"Little Giant"* and "OK" on screw-plates.

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WE invite you to send for booklets and catalogs descriptive of our tools. We will be pleased to place at your service our nearly fifty years of experience in making fine tools if you will fill out the coupon and mail it in. We will supply you with the latest information concerning the tools indicated, and place your name on our mailing list to receive additional information as issued.

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☐ Production Threading Tools
☐ Repair Threading Tools

Name Position
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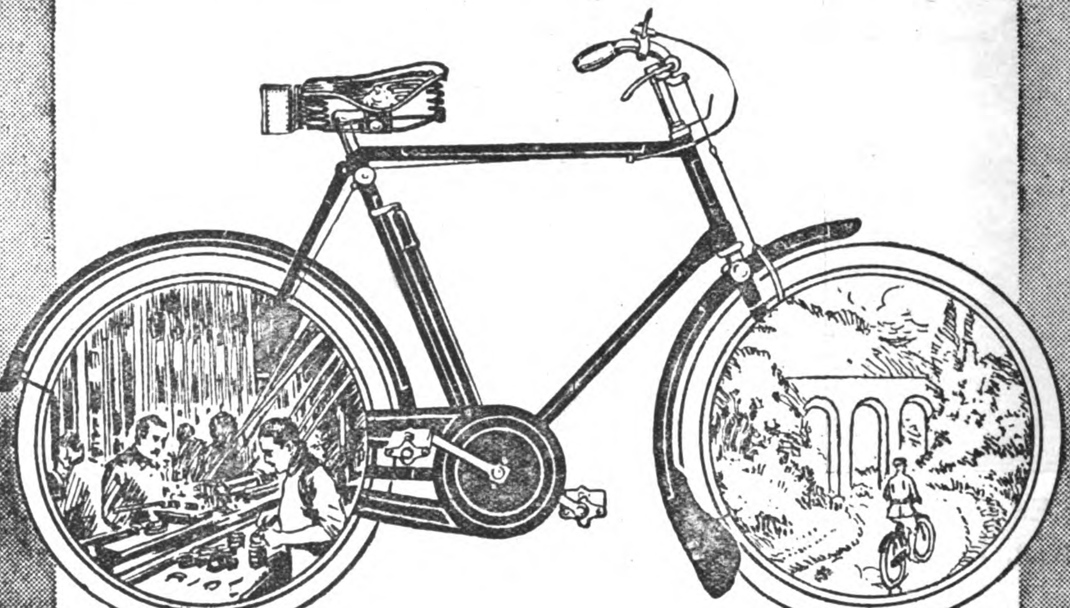

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RALEIGH

THE ALL-STEEL BICYCLE

with Dunlop Tyres and Sturmey-Archer 3 speed gear. The Cycle that is built with accuracy from steel of proved excellence, though reasonably light in weight has exceptional strength.

The Raleigh cycle is as satisfactory to sell as it is to ride.

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The "Tas Hee" & "Szy Hee" brands of cigarettes.

They are not to be surpassed in excellence, selected from the most superior tobaccos, they will be found pleasing smokes by all. Connoisseurs agree that they are not to be excelled for their fragrance

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Try them and you will like them.

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Manufactured by the
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Tobacco Co., Ltd.,
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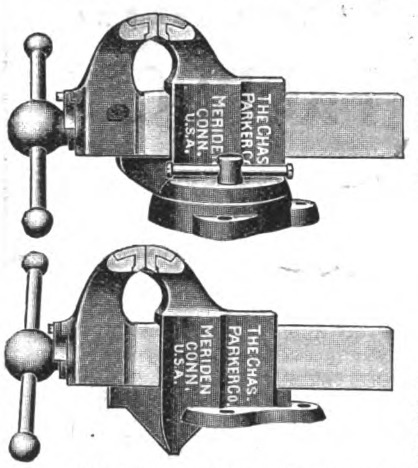
REPRESENT
MAXIMUM ECONOMY

An ordinary vice, broken down, not only means the loss of the vice and the expense of a new one, but it means the interruption of routine until it can be replaced.



PARKER VICES, on the other hand, have every individual part carefully designed and constructed to provide maximum efficiency and economy and to insure long life. If, by any chance, any part should give way or weaken it can quickly be replaced, at slight cost, with practically no interruption of service or routine, leaving the vice still in good working order. PARKER VICES, stationary or swivel base, are one of the celebrated

PARKER'S PRODUCTS
"BUILT UP TO A STANDARD NOT DOWN TO A PRICE"

built to give satisfaction under severe conditions and hard service. The cheapest—by all odds—in the long run. They bring profit and goodwill to both importer and dealer.

Illustrated catalogue, with attractive trade terms, sent upon request.
Correspondence in all languages.

ADDRESS EXPORT DEPARTMENT, DIVISION A.

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We are also manufacturers of Alarm Clocks, Bath Room Accessories, Coffee Mills, Cork Pullers, Lamps, Lemon Squeezers, Piano Stools, Chairs and Benches, Shot Guns, Tinned Steel Spoons, Knives and Forks, Wood Screws.

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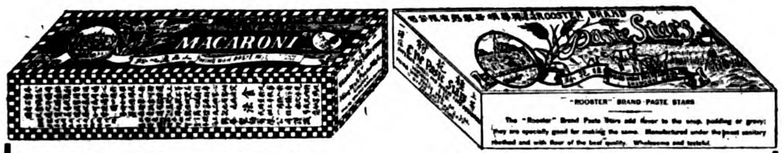
ESTABLISHED 1832

Representative in India: ELLIOTT & CO., Clive Row, Calcutta, India



Cable Address: "HINGWAH" Code used: A.B.C. 5th Edition

香港上海興華機器製麵有限公司

The Hing Wah Paste Manufacturing Co. Ld.

Macaroni, Paste Stars, Egg Noodles, Vermicelli, and all kinds of Soup Stuffs

All our Pastes bear the "ROOSTER" label and are made with Flour of the Best Quality containing a large percentage of Gluten, and are manufactured under the most sanitary conditions. Having been analyzed by the Government Analyst of Hongkong, our productions have been found to be free from adulterations and from any injurious ingredients.

Large quantities have been exported to various parts in the World.

Your esteemed orders will receive our prompt and careful attention.

Terms moderate, especially for Agencies.

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Tel. No. 2230

Branch Office:
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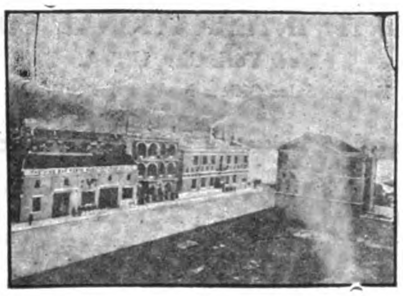

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PANAMA PACIFIC EXHIBITION, SAN FRANCISCO, 1915.
MOST POPULAR **BEER** IN THE ORIENT

ASAHI YEBISU SAPPORO

BREWED BY

THE DAI NIPPON BREWERY CO., LTD.

HEAD OFFICE: TOKYO

BRANCHES: OSAKA, SAPPORO, SEOUL, SHANGHAI, TSINGTAO.

SOLD EVERYWHERE

Agents: MITSUI BUSSAN KAISHA,
China, Straits Settlements, Dutch East Indies, and British India

DIXON'S GRAPHITE PRODUCTS

FOR THE POWER HOUSE

Dixon's Flake Graphite

The admixture of the proper proportions of this unsurpassed natural lubricant to any oil not only improves the lubricanting qualities of that oil and thereby reduces friction and wear, but it also gives positive protection against hot, dry, cutting, grinding bearings. It is impossible for a bearing lubricated with Dixon's Flake Graphite to run hot. If you want to keep down bearing wear and to economize power by minimizing friction, you must use Dixon's Flake Graphite.

Dixon's Graphite Cup Greases

Dixon's Flake Graphite mixed with grease gives results just as valuable as when mixed with oil. But the full advantages cannot be realized if too much, or too little, graphite is used. Therefore, Dixon's Graphite Cup Greases are prepared, representing exactly the right combinations of the best mineral grease with Ticonderoga Flake Graphite. They are made in a variety of grades, alike as to quality but differing in hardness for various classes of work. Tell us the service contemplated and we'll recommend the right grease from the Dixon Line.

Dixon's Graphite Pipe Joint Compound

Though primarily intended for screwed and flanged pipe work, this compound is just as useful and efficient on bolts and nuts, studs, manholes, handholes, etc. A hard, set, "rust" joint is impossible where Dixon's Compound is used. The graphite lubricates the threads and surfaces, prevents rust and corrosion. It lightens the labor of setting up joints and, while giving absolute tightness, never hardens or sets; and the opening of a joint is as easy (months after, even) as the setting up. Dixon's Pipe Joint Compound is an economy that should be in every shop.

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"Valuable Graphite Products"

Made in Jersey City, N.J.

by the

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22 Kiukiang Road

WALWORTH Malleable Fittings

FIG. W1
ELBOW

FIG. W2
ELBOW

Daily Chemical and Physical Tests Maintain the Quality of the Castings.

FIG. W13
TEE

FIG. W14
TEE

Rigid Inspection Before and After Tapping Insures You Against Receiving Defective Fittings.

FIG. W15
CROSS

FIG. W16
CROSS

Chamfering Permits an Easy Entrance of the Pipe and Prevents Damage to Threads in Shipment.

FIG. W76
FLANGE

FIG. W21
BEND

Quality and Service are Delivered With Each WALWORTH MALLEABLE FITTING

FIG. W33
COUPLING

FIG. W34
COUPLING

FIG. W35
CAP

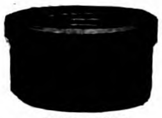
FIG. W36
CAP

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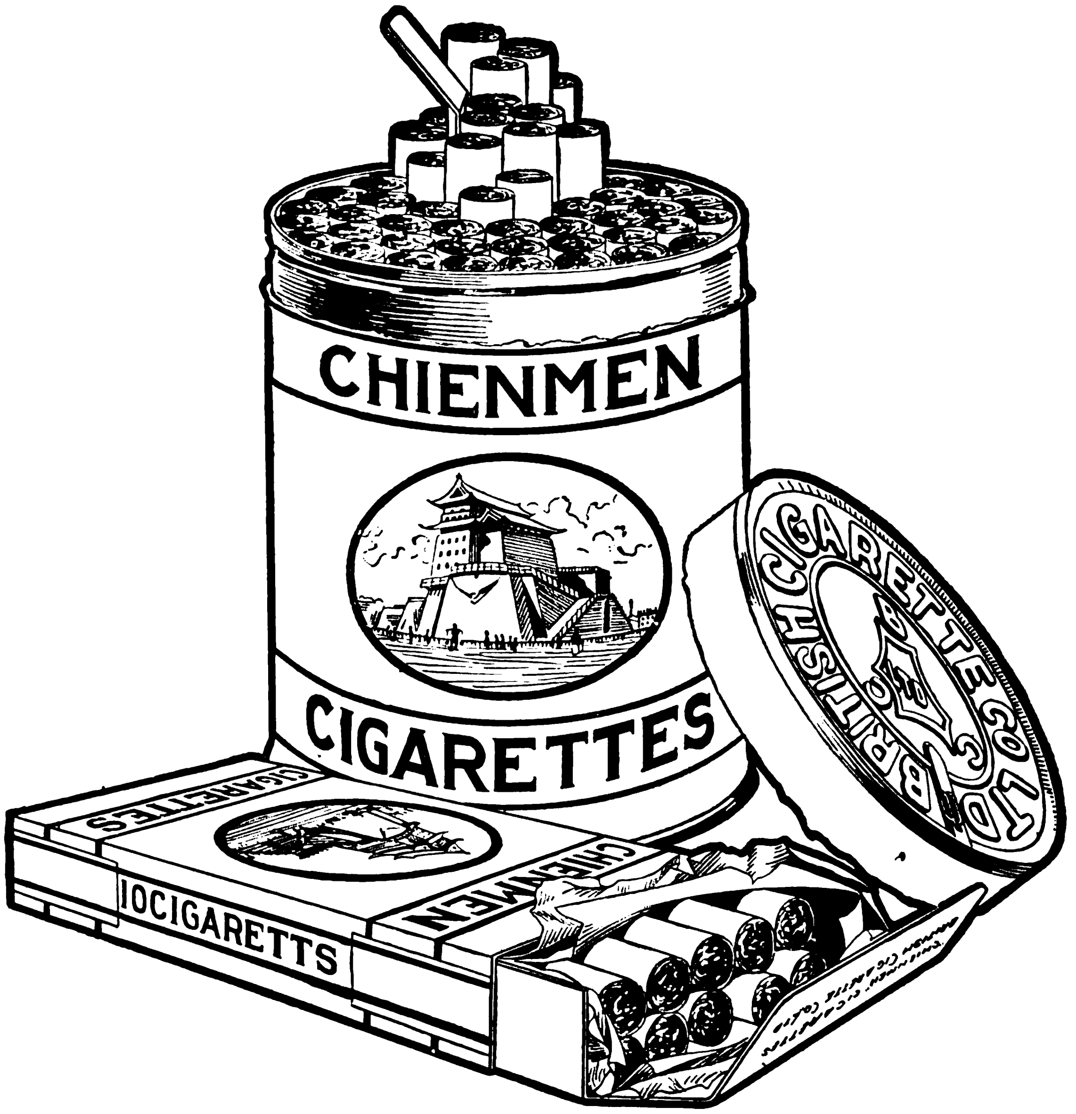

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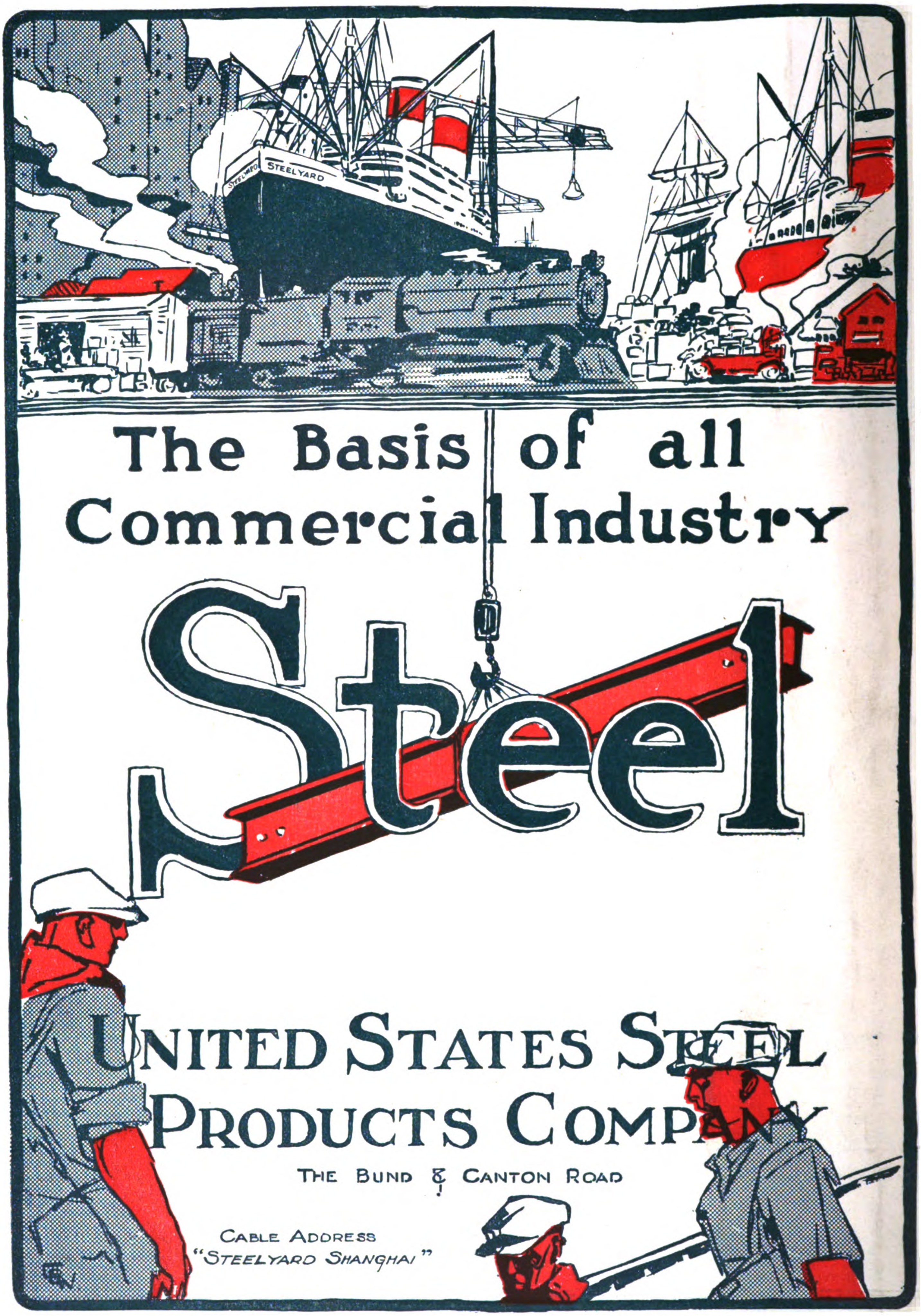

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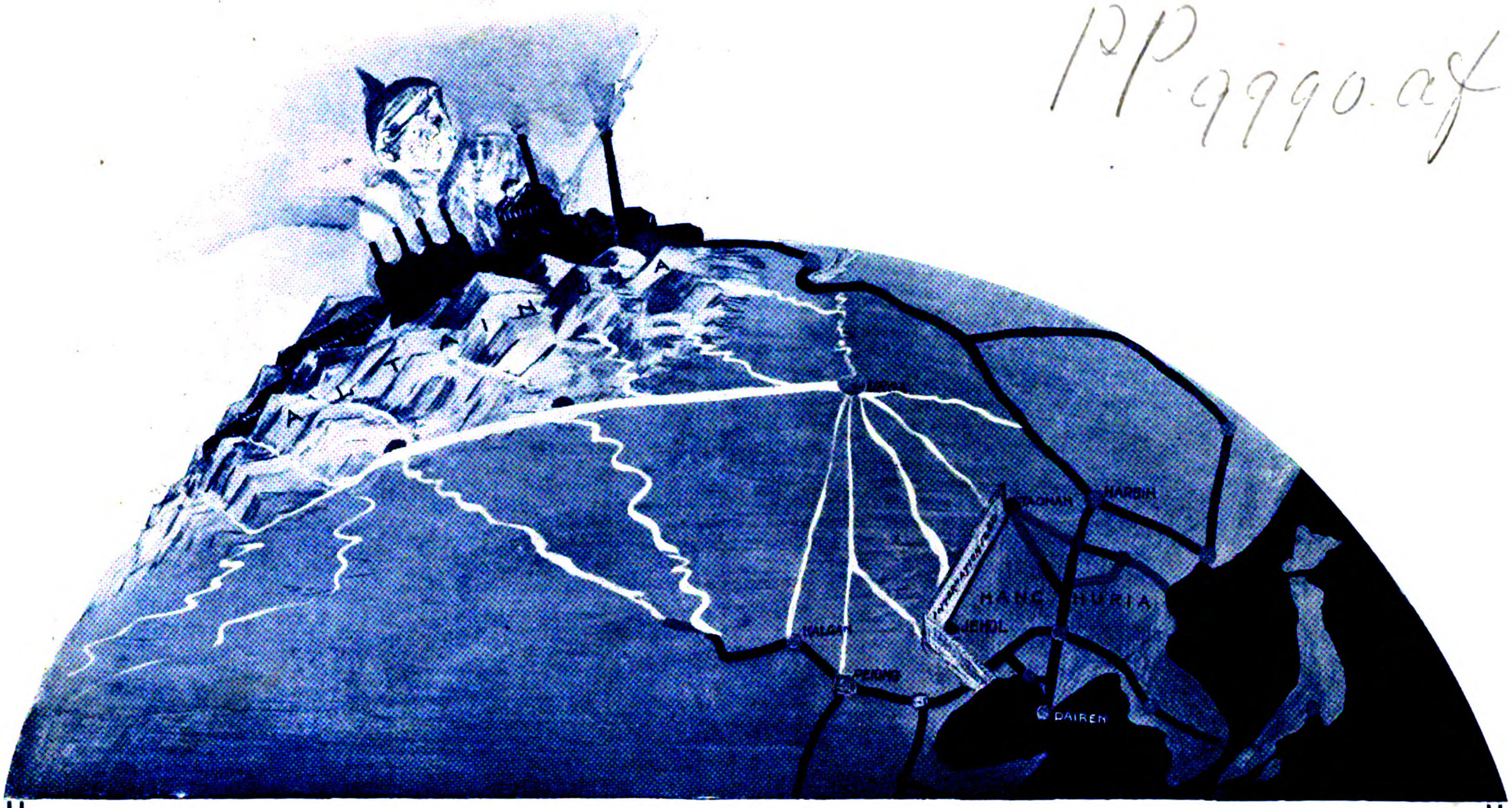


THE MENACE FROM THE DIRECTION OF URGA

WILL AN AMERICAN ARMY FIGHT IN ASIA?

THINK HARD, AMERICA!

JAPAN'S SACRIFICE IN THE INTERESTS OF WORLD PEACE REVEALED IN THE CONSORTIUM NEGOTIATIONS

A HUMAN DOCUMENT THAT AMERICANS MUST READ, DIGEST AND REPLY TO

AN ANSWER TO THE AGENTS OF ARMAGEDDON

SPECIAL SUPPLEMENT

The FAR EASTERN REVIEW

APRIL, 1921

Mr. JUNNOSUKE INOUYE

Governor of the Bank of Japan

The leader of the Japanese banking interests. A firm friend of America, he telegraphed Mr. Lamont that Japan would enter the consortium. On receipt of this assurance, Mr. Lamont voyaged to the Far East with the full support of the American, British and French governments and negotiated upon the ground the final terms of the consortium agreement. Mr. Lamont's tact and diplomacy, strengthened by the arguments of Mr. Inouye influenced the Japanese military leaders to recede from their position on the Taonan-Jehol Railway, and to trust in the good faith of their ally and America to see that Japan's vital interests were never placed in jeopardy in these regions by the activities of the consortium. To Mr. Lamont, as chairman of the consortium, has been conceded the credit for the successful termination of the negotiations which brought Japan and America into harmonious co-operation for the purpose of assisting China to regain her feet. To Mr. Inouye belongs the credit of bringing Japan into harmony with the consortium plan, and making it a real instrument for world peace and Pacific harmony.

Supplement to

The Far Eastern Review

SHANGHAI, APRIL, 1921

THINK HARD, AMERICA!

MUST AMERICA FIGHT JAPAN? Such a war is unthinkable, a crime against humanity. Yet powerful forces are working to bring it about. Because of the absence of a definite foreign policy, lack of direction and co-ordination in the conduct of our Far Eastern affairs under the Wilson administration, the war-makers have had their innings. We stand to-day, pitted against Japan, with the agents of armageddon shouting, "Sic 'em, Sam!"

On the other hand, greater forces are working to preserve good relations and promote harmony and co-operation. We make no apology for standing with the latter element, which does not stoop to confidential and improper propaganda to attain its ends.

We realized at the Paris conference that if peace in the Pacific was to be preserved, Japan's story would have to be told. We also realized that if the consortium was to be a success and China placed upon her financial feet, America and Japan would have to loyally co-operate as partners in future loan transactions. We determined to tell Japan's story, and in this Special Supplement have brought together various articles that have appeared in THE FAR EASTERN REVIEW throwing light on her policies and the reasons for their application. The facts reveal that Japan has met us on all points in order to preserve our friendship, even at the price of sacrificing her most vital line of national defense. The United States is in honor obligated in return to come to her armed assistance in the event that her position in Manchuria is ever menaced by an invasion from the direction of Urga.

Let us look ahead a year. In 1915, Japan forcibly extracted from China certain treaties as the outcome to her Twenty-one Demands. One of these demands was absolutely essential to Japan's security, the extension of the Liaotung lease to 99 years. China signed the treaties under protest. The American government notified the governments of China and Japan that it could not recognize the treaties. Now the original Russian lease to the Liaotung territory expires in March 1923. The Chinese government has declined to open direct negotiations with Japan over the restoration of the German rights in Shantung and its delegates to the league are advocating instead that the whole question of the legality of the 1915 treaties be brought before the council of the league. The situation seems clear. If matters are permitted to drift, in another year the Chinese government will serve notice upon Japan to vacate Liaotung on the expiration of the original lease in 1923, and will call upon the United States for support.

It is a good time to look the facts in the face. It is well to know where we stand. It is for this reason that THE FAR EASTERN REVIEW presents Japan's story in connection with the consortium documents. Visualize the situation if we can from the viewpoint of Japan. Japan fought China in 1895 and demanded the cession of the Liaotung peninsula in the peace treaty. Russia, Germany and France came together to force Japan to forego the fruits of victory.

In gratitude for this service, China entered into a secret alliance with and ceded to Russia the very territory that Japan was compelled to relinquish, thus bringing Russia into Port Arthur and to the banks of the Yalu, and precipitating the war of 1905. Again, Japan emerged victorious from the conflict, with only a busted, broken-down railway and the remnants of a short-time lease as the fruits of her sacrifice. The ink had hardly dried on the Portsmouth Treaty when schemes were devised to undermine her hard won position. Japan fought Germany in 1914, ousting her from Tsingtau and Shantung. She does not want Shantung and promised to return it to China. She does want Liaotung, and it is to be assumed that she will employ her advantages in Shantung as a diplomatic trading pawn to consolidate her position in Manchuria. American diplomacy has been instrumental in depriving Japan of the opportunity of using her advantage in Shantung, and thereby increasing the chances of her being called upon to get out of Liaotung. Deprived of the fruits of her victory in 1895, Japan now faces the possibility of having to surrender the reward of her sacrifices in 1905, as well as the advantages acquired as the result of her victory over Germany. Place ourselves in Japan's shoes. What would we do?

Foremost in the campaign for peace and co-operation with the United States stands the present Japanese cabinet and its banking group in the consortium. They believe that when the American people understand their viewpoint, ill-feeling and suspicion will give place to a just appreciation of their difficulties. They are honest, sincere and desire our friendship. It is our most valuable asset. It is also true that there exists in Japan, a general staff, into whose care is entrusted the safety of the empire against attack from any and all possible enemies. According to all reliable reports, its members are busily engaged in the same identical labor as their colleagues of the American general staff, attending strictly to their own affairs. The Japanese, however, are perhaps a little more pre-occupied than the Americans. They look ahead a few years and see the doors of all other countries bordering the vast Pacific, closed to their people. Their eyes turn westwards towards Manchuria, Mongolia, Siberia, their only possible outlet.

The foreground of this picture is most alluring. Green valleys, wooded mountains, broad prairies, beckon them onwards. The background is red, blood red. The Germans have also turned their eyes in this direction and are preparing to migrate back to the original home of the Huns in the Altais. The next great war will be fought in these regions, a struggle on the part of Japan for the right of the yellow man to live. It is not a pleasant outlook.

In contemplating this picture, the possibility looms up in the near future that Japan may be invited to evacuate Liaotung, a polite diplomatic way to suggest that she commit *hari-kari*. The Japanese general staff is undoubtedly giving grave thought to this possibility. Will Japan lightly accept the silken cord? Will she, after all her sacrifices, be called upon to get out of Liaotung? Japan has fought two costly wars for its possession. Will she, if needs be, fight a third?

The answer lies not with Japan. We present this document in order that Americans will find facts herein that will help them to answer the question correctly.

"The friendship of Japan is the best international asset that we have." So declared Roosevelt, a real man, who knew when he was dealing with real men. Roosevelt's statement holds good. In another generation the future of the world may depend upon our attitude towards Japan to-day. Will we cement this traditional friendship into bonds of enduring understanding? Will we spurn the outstretched hand across the Pacific and force Japan reluctantly, sorrowfully and in self-preservation, to clasp the hand of the Hun in Mongolia, and dictate terms to the rest of Asia? It is one or the other. The answer lies not with Japan.

The Menace from the Direction of Urga

GERMANY PLANS TO CREATE A NEW EMPIRE IN CENTRAL ASIA SAFE FROM ALLIED INTERVENTION BY COLONIZING THE ANCESTRAL HOME OF THE HUNS AND DEVELOPING THE VAST MINERAL DEPOSITS OF THE ALTAIS WHICH WILL ENABLE HER TO RESUME THE *DRANG NACH OSTEN* AND THE CONFLICT FOR WORLD EMPIRE

Does Article X Survive in "The Far Eastern League of Nations?"

By George Bronson Rea

PERMISSION has at last been granted by the various governments concerned for the release and publication of the consortium documents confidentially communicated to the Chinese government on September 28th, 1920. To the readers of THE FAR EASTERN REVIEW they throw no new light on the facts of a situation that have been accurately set forth from time to time in its pages. From the day the consortium was organized in Paris we have correctly stated the facts and drawn attention to the one obstacle to its success. In presenting these documents in this Special Supplement, it is only necessary, therefore, to reprint the articles appearing in the January and March 1921 numbers of this magazine entitled, "The Origin of China's Modern Troubles" and "The Real Significance of the Consortium," in order to accurately interpret the motives which impelled the Japanese government and its financial group to hold out for assurances that their national security would never be placed in jeopardy through the operation of the new combination. In this connection, and to keep the record straight, we also reprint the article from the February number of *Asia* describing the activities of the late Mr. Willard Straight while acting as American consul-general at Mukden and as representative of Mr. Harriman and the American group. Unless this story is categorically denied, we must expect that intelligent Japanese will harbor the suspicion that behind the declarations of solicitude for the integrity of China, there lurked the determination to internationalize a contract, acknowledged by the man who forced it through, as an instrument to destroy the value of the South Manchuria Railway, and, under given conditions, to compel Japan to sell out, or get out, of Manchuria. We should not permit the idea to take root in the minds of the Japanese, that after closing our own doors to their entrance we have followed them into Asia and schemed to undermine their hard-won position when their backs were against the wall fighting for their very existence. Neither should we permit America to be drawn into the vortex of the Asiatic race question and placed squarely across the path of Japan in territory where the next world war, as inevitable as the one just ended, must be fought out. We hold no illusions about this. Sooner or later the abnormal increase in the populations of China and Japan will force the surplus into Asia to seek the means of subsistence. Here they must come into conflict with the rising Slav overflow diverted into Mongolia and the Altai regions under the masterful direction of Germany.

"Fifteen Million Germans must Emigrate or Starve."
This Picture and Caption from the *Illustrirte Zeitung* of Berlin Give a German Point of View of the Expected Exodus.

Germany's Obstacle in Asia

While the whole world is speculating upon the possibility of war between Japan and America, the result of carefully prepared German propaganda insiduously spread by well-known German sympathisers, Germany is laying plans to control another and greater empire which will be safe from the assaults of her recent enemies. The one obstacle to the ultimate success of this great dream is the constant vigilance and military preparedness of Japan in Asia. If Japan's power can be broken through a conflict with America and her dominant position in Eastern Asia destroyed, within fifteen years, a stronger Germany, singing a new Hymn of Hate, will re-open the conflict for world empire with every assurance of success.

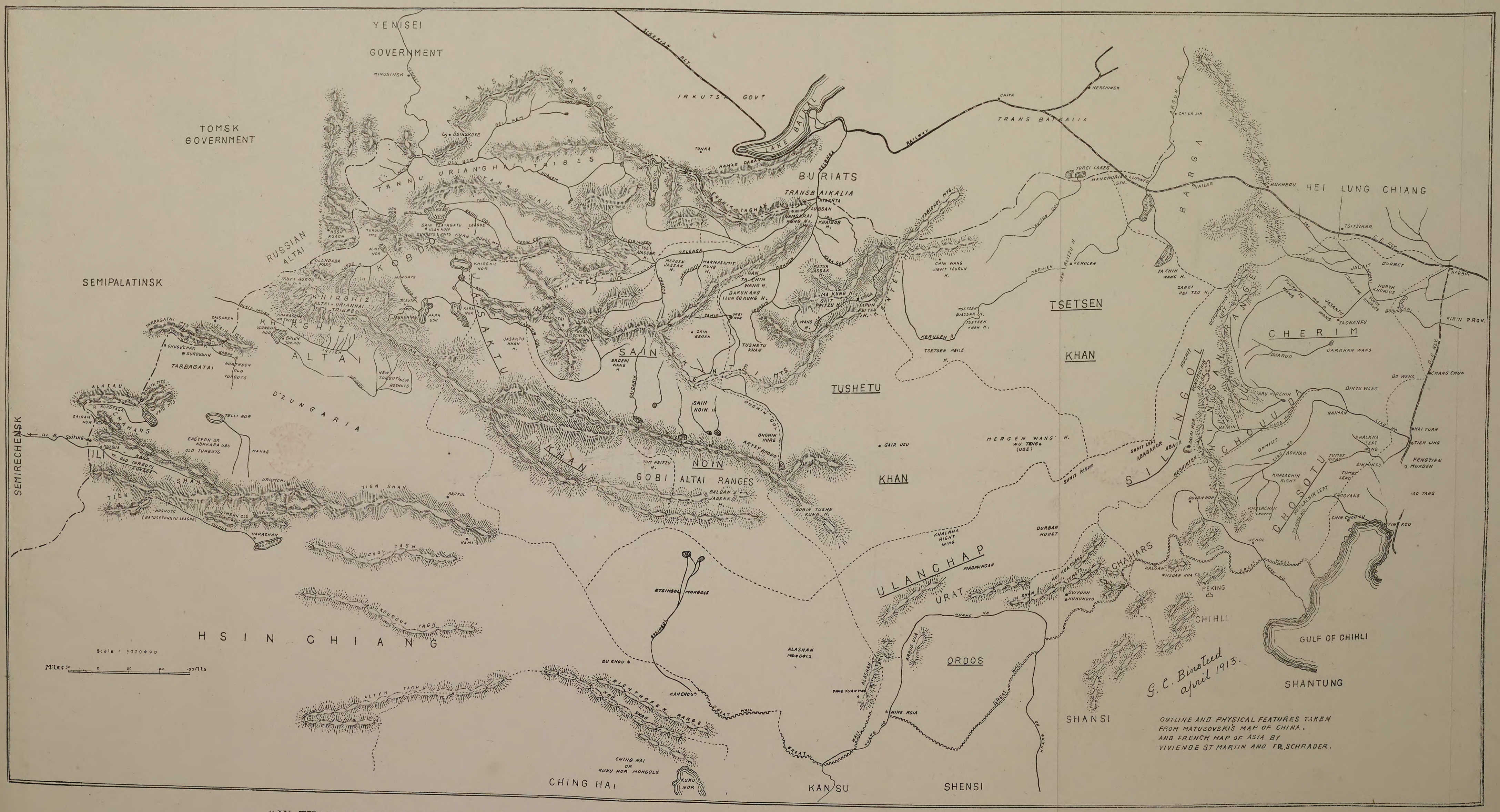
The Writing on the Wall

It is no time for Americans to dream. The handwriting stands large upon the wall. Get the facts of the situation right, and there is only one deduction possible.

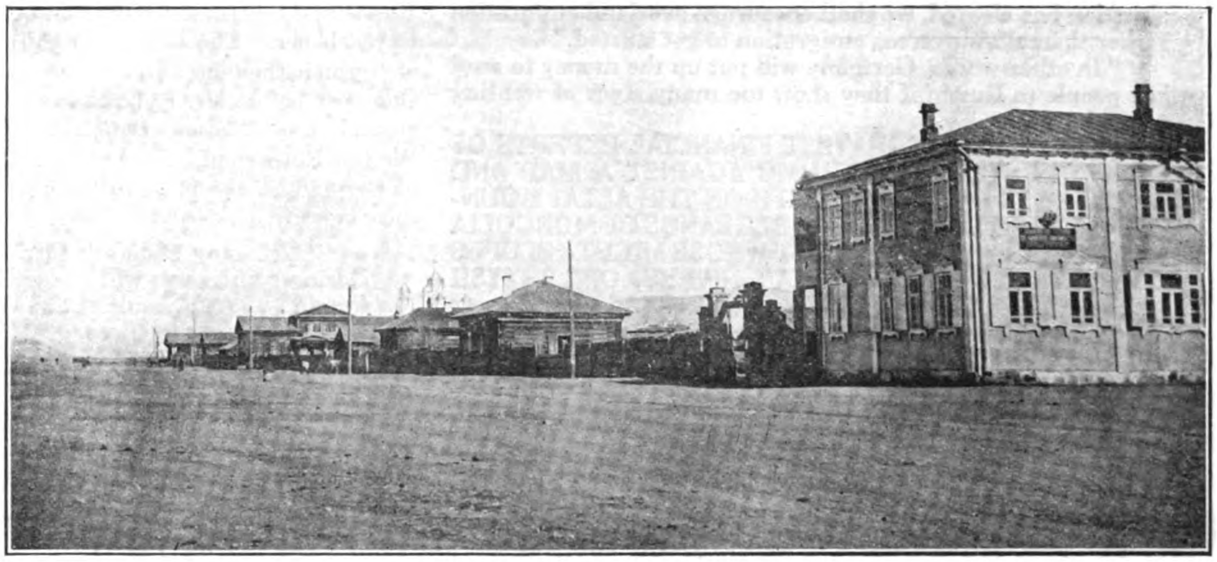
[British Museum stamp]

THE ALTAIN-ULA, "MOUNTAINS OF GOLD"

THE ANCESTRAL HOME OF THE HUNS



"IN THESE MOUNTAINS THERE LIES AN UNTOLD WEALTH OF IRON AND COPPER AND SILVER. OUR EXPLORERS HAVE REPORTED THAT IT IS SO. THE IRON MINES OF LORRAINE ARE OURS NO LONGER, AND WE MUST HAVE IRON. THE ALTAI REGION IS THE RICHEST MINERAL REGION IN THE WORLD. GERMANS WILL GO TO THAT REGION IN GREAT NUMBERS." *(Dr. Jung, Chief of the German Government Bureau of Emigration).*



Selinginsk, in the Trans-Baikal Region

In the next twenty-five years, Japan must find room for another 25,000,000 new people. In the same length of time China must provide for an increase of 200,-000,000. Let us admit that the statement is overdrawn, then cut the figures in half in order to meet any and all objections. The result is the same. Where will this great yellow increase find room to live in? In Asia? Right. Then turn to Russia, with its 180,-000,000 people doubling their numbers in fifty years. Where, in the next quarter century will 90,000,000 more Slavs find their outlet? In Siberia? Right. Now let us think hard and try to say where 30,000,000 new Germans will go. Into lands of the allied and associated powers or their colonies, where they are not wanted? No! Where, then? Answer this correctly, and we have the key to the next world catastrophe.

Back to the Home of the Huns

Will we argue and discuss this from sentimental or theoretical viewpoints; will we dismiss it by prattling out the pretty line of propaganda dope (the word is used here in its proper significance) made in Germany and distributed by paid agents to lull us into a state of false security, or will we let the answer come from the highest possible authority, the German government itself? Turn to the files of *The Saturday Evening Post* of June 19th, 1920, and we will find a most exhaustive and illuminating article from the pen of that careful investigator, Mr. Kenneth L. Roberts. It is entitled "The String on the German Exodus," and in it, Mr. Roberts sets forth at length his talk with Dr. Jung, the highest official of the German government board of emigration. Let us get to the meat of the interview:

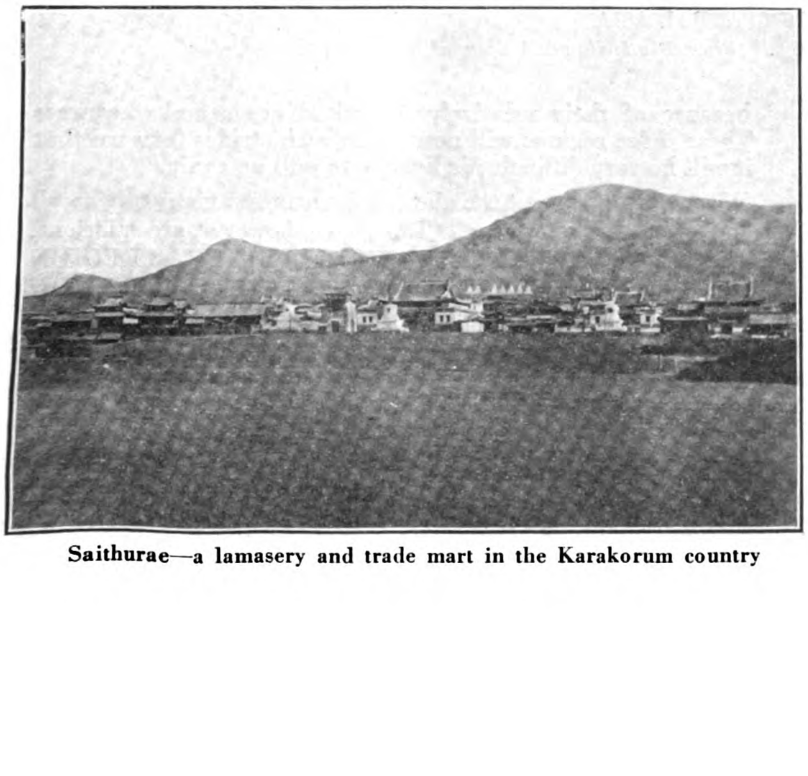
"We want our people to stay where they will not be lost to us," said Dr. Jung. "We want them to stay as near home as possible. We do not want them to cross oceans: we want them where they can board trains and come back to us in case of need." That is why Germany is determined to stop emigration to North America and to South America and turn it to Russia, where the softest and richest picking of modern times lies ready for the picker."

"The German emigration bureau hasn't a good word for Brazil or the Argentine, for America or Canada or Mexico, for Paraguay or Uraguay or Chili or Ecuador or Peru. But for Russia and Siberia it has a large mellifluous horn, and it is blowing steadily and resonantly into it with all the wind at its command. It is booming and tooting and oompahing away on the glories and the resources and the advantages of Russia and Siberia. It is making the welkin ring deafeningly with its persistent song. It may even be said that the welkin is being rung so steadily that a new welkin may soon have to be constructed.

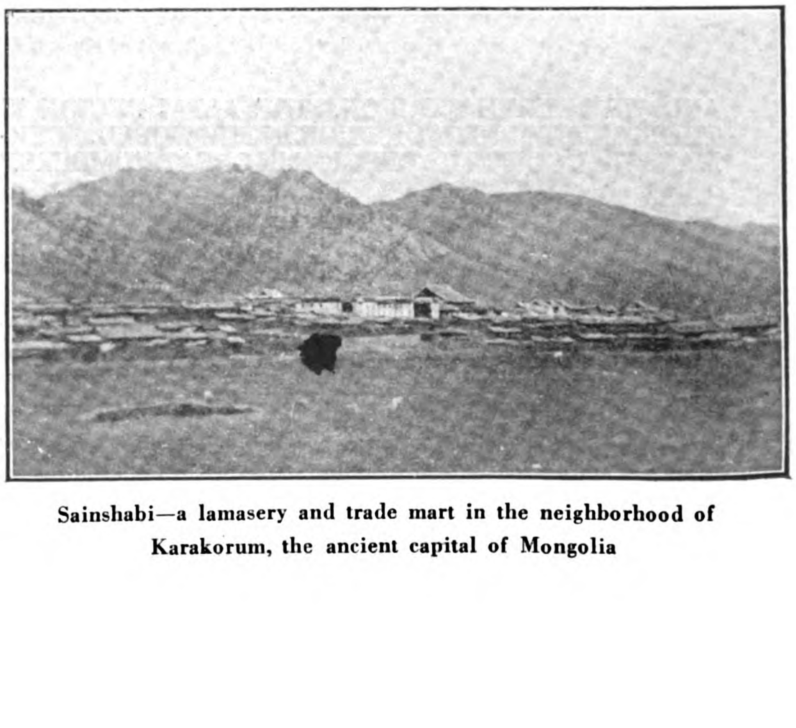
"The German government is holding emigration in check by every means in its power until communication has been opened with Russia once more. Then it will take its 5,000,000 would-be emigrants and smooth down the path before them and strew roses on it and push them over into Russia with a loud huzza.

"To many people this will sound like the result of a prolonged bout with a Welsh rabbit, a mince pie and several other indigestible and dream-provoking foods. It is not, however. It is the result of German thought and German efficiency and German foresight and German determination to patch up an empire in Europe which shall be an *ersatz*, or substitute for the dream empire she has lost.

"I asked Dr. Jung about German emigration to Russia. "Russia and Siberia," said he, "are the lands of promise, Russia to-day is impossible because of the disturbed situation. When the situation clears, however, Russia will be the logical goal for all German emigration. If necessary, when the



Saithurae—a lamasery and trade mart in the Karakorum country



Sainshabi—a lamasery and trade mart in the neighborhood of Karakorum, the ancient capital of Mongolia

situation has cleared, we shall encourage overland emigration rather than allow oversea emigration to get started."

" In other words, Germany will put up the money to send her people to Russia if they show too many signs of wanting to go the other way.

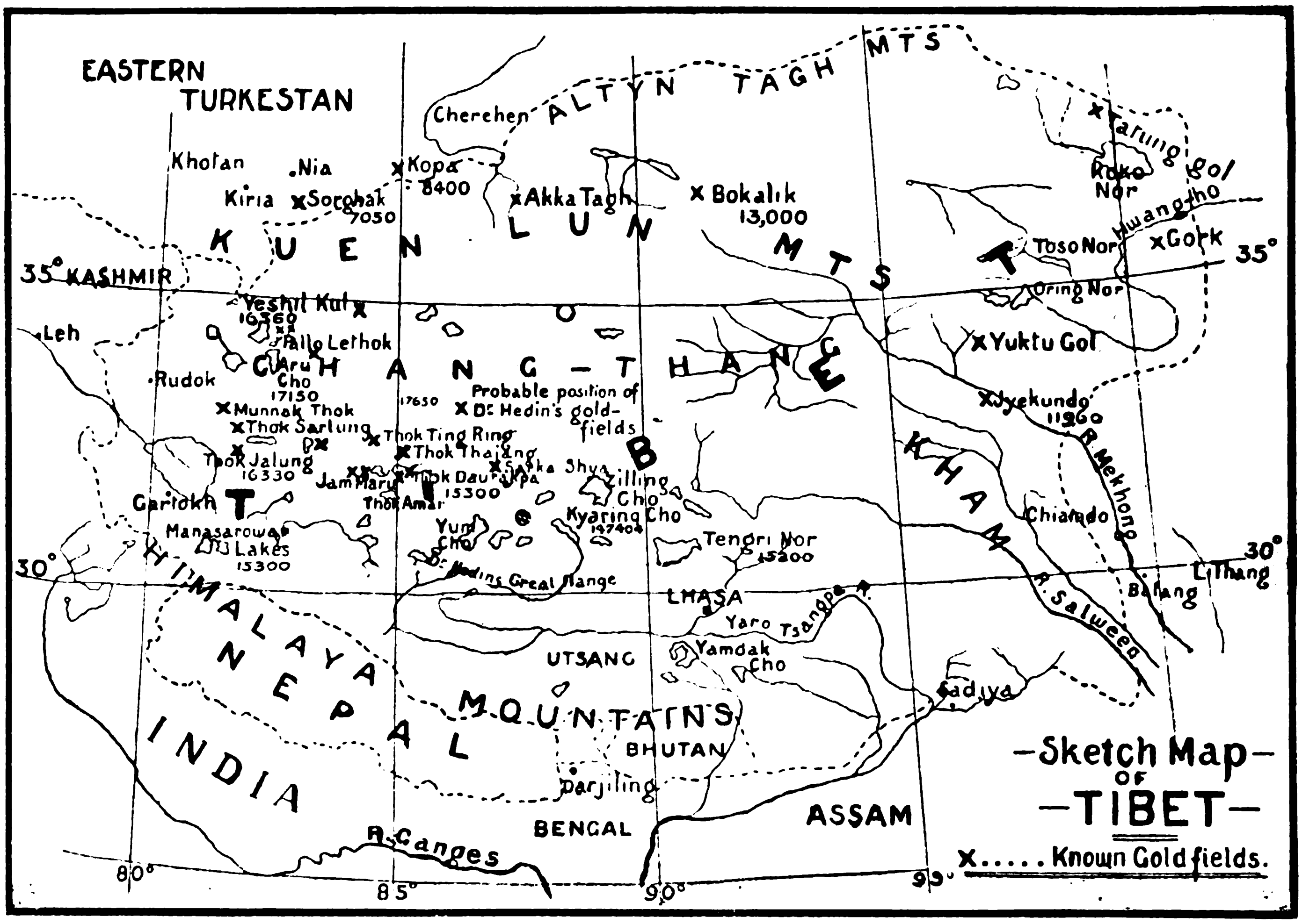
" ONE OF THE GREATEST FINANCIAL EXPERTS OF GERMANY STUCK HIS THUMB AGAINST A MAP AND SCREWED IT BACK AND FORTH ON THE ALTAI MOUNTAINS WHICH DIVIDE THE TABLE LANDS OF MONGOLIA FROM SIBERIA AND AMONGST WHOSE MIGHTY SLOPES THE THREE GREAT SIBERIAN RIVERS, OBI, IRTYSH AND YENESEI HAVE THEIR BEGINNINGS.

" IN THESE MOUNTAINS, "said he," THERE LIES AN UNTOLD WEALTH OF IRON AND COPPER AND SILVER. OUR EXPLORERS HAVE REPORTED THAT IT IS SO. THE IRON MINES OF LORRAINE ARE OURS NO LONGER,

Russia and Siberia the armies and navies of the world are powerless to reach her. The war had hardly terminated before the leaders of German thought were prepared with their plans for the future. One year before Mr. Roberts made his careful investigation on the ground, the *Chicago Daily News* published an interview with Walter Rathernau, the head of the General Electric Company of Germany, "the most brilliant and daring political thinker and sociologist in modern Germany." Rathernau said then :

" Germany stands before an epoch of huge emigration. German emigrants will make their way to South America and Russia . . . As a result of the weakening of Europe, the future will belong to the three great world economists—America, Russia and Japan. Europe is destined to lose its economic importance. The new economic areas - America, Eastern Asia (Japan) and Western Asia (Russia) will come to the front

THE FUTURE TREASURE HOUSE OF THE WORLD



THE GOLD FIELDS OF CENTRAL ASIA

Sketch Map of Tibet, Showing Extent of Known Deposits. (From *The Indian and Eastern Engineer*, 1907)

AND WE MUST HAVE IRON. THE ALTAI REGION IS THE RICHEST MINERAL REGION IN THE WORLD. GERMANS WILL GO TO THAT REGION IN GREAT NUMBERS."

Cold Calculation

This seems final. Let us not delude ourselves that it is a new plan recently conceived. Disabuse our minds of this. Mr. Roberts opens his article with the sapient remark that "The Germans are great hands at figuring out exactly what will happen under certain conditions and at taking steps to provide for the happening." Everything is figured out. Nothing is left to chance. They lost the war but they are still figuring, and when the armistice was signed, plans were already drawn looking to a future rehabilitation of the empire. The lesson of the war was learned ere it was lost. Germany could not fight the world in France. In the depths of

because of their relatively unlimited areas and resources These three regions will now make such strides forward that it will be very difficult for Europe to pull up again."

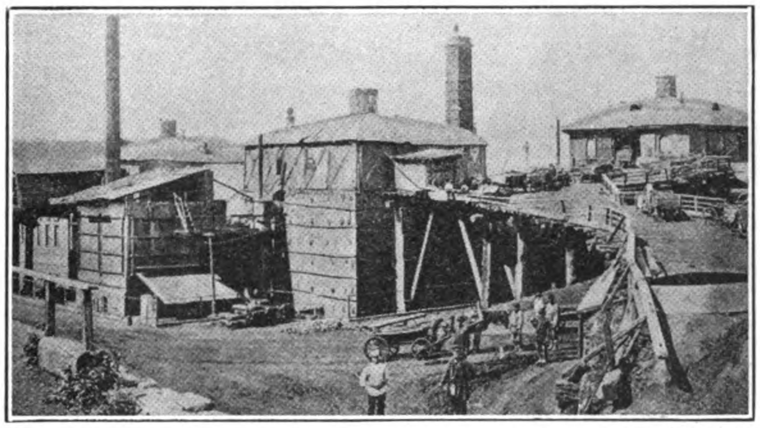
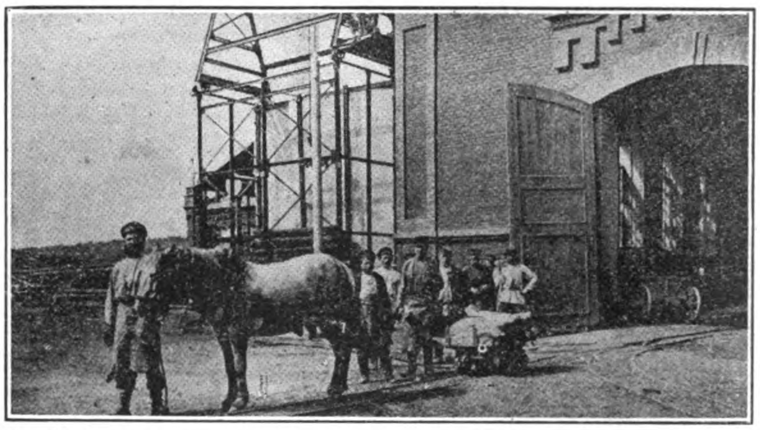
We could supplement the above statements by many others, all harping on the same theme. The above, however, are sufficient. "THE ALTAI REGION IS THE RICHEST MINERAL REGION IN THE WORLD. GERMANS WILL GO TO THAT REGION IN GREAT NUMBERS." The German government, through the responsible head of its emigration bureau, has accurately answered our question.

Japan's Right to Self-Defense Denied

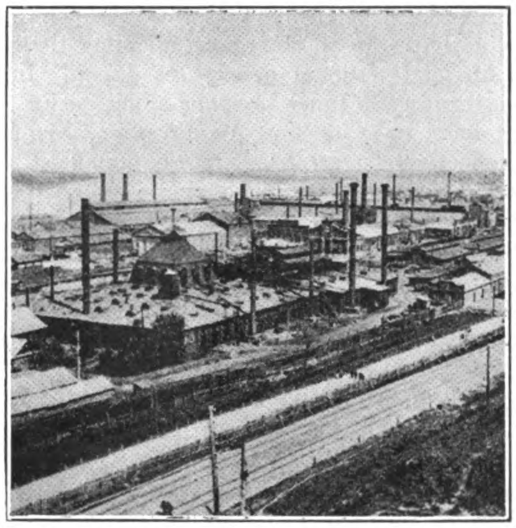
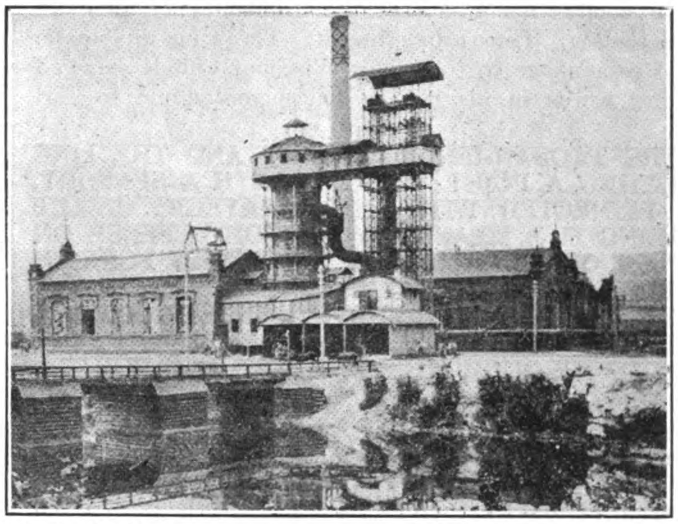
What has all this to do with the consortium, you will ask ? Read carefully the article entitled "The Real Significance of the Consortium" and seek the right answer to Japan's prolonged

"GERMANY MUST HAVE IRON"

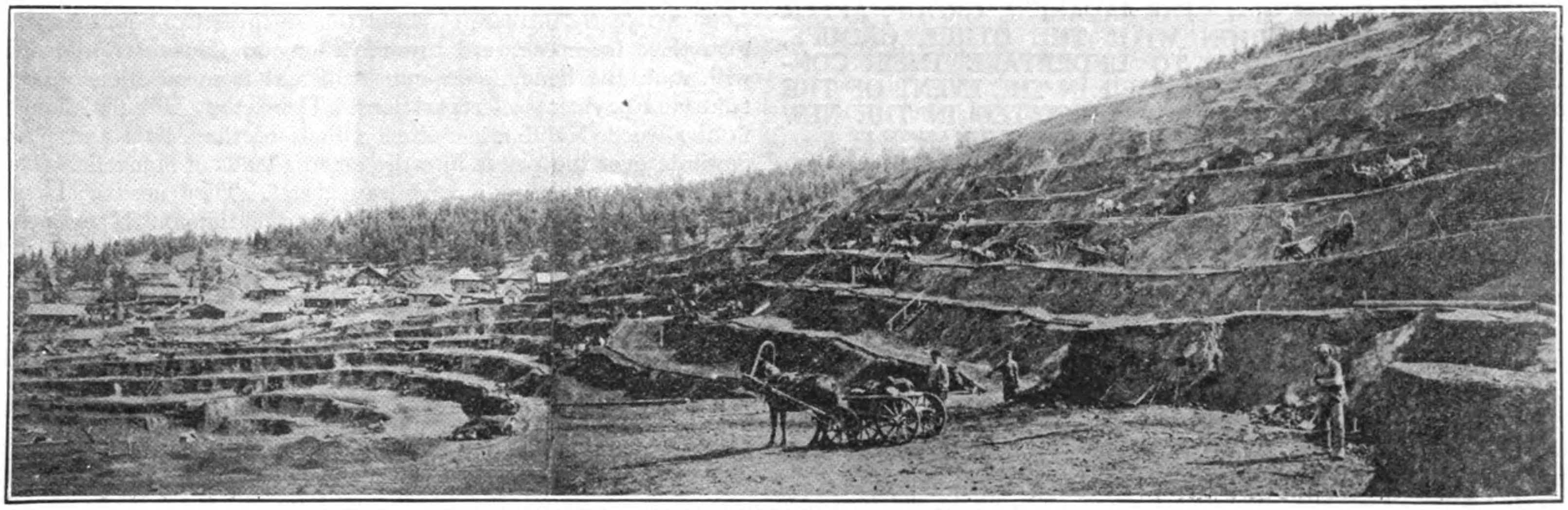
WHERE COAL AND IRON ABOUND

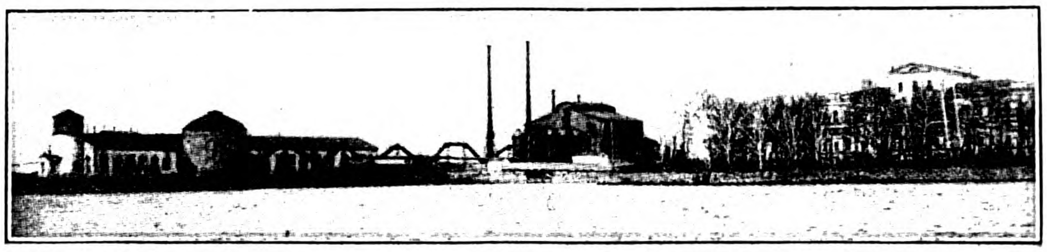
Iron Furnaces in the Urals

Blast Furnace and Iron Works in the Urals

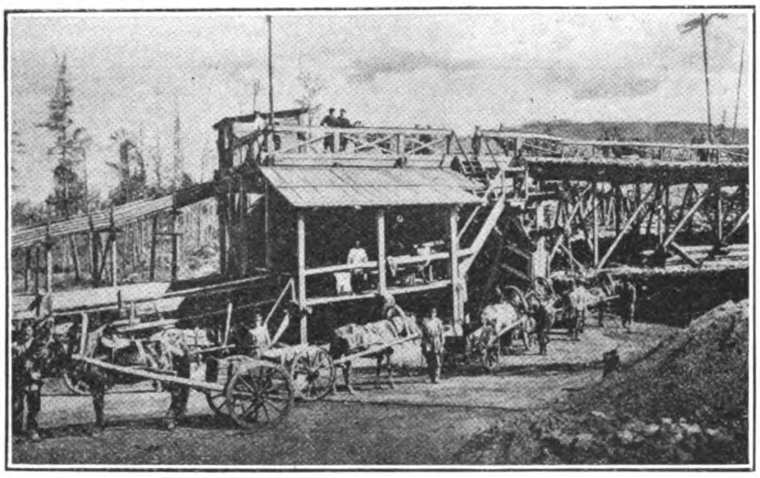


An Open Cut Coal Mine in the Urals



Blast Furnaces in the Urals

WHERE THE PICKING IS GOOD



Gold Washing in the Baikal Region

A Poacher Panning Gold in a Baikal Creek

opposition to pooling her rights to the Taonan-Jehol line and its branch to the sea. Let us underline it. Throwing diplomatic courtesy and camouflage to the winds, Viscount Chinda summed it up in a few words in his confidential memorandum to Earl Curzon:

" THE TAONAN-JEHOL RAILWAY AND THE LINE CONNECTING A POINT THEREON WITH A SEAPORT, WERE PROJECTED WITH THE STRATEGIC OBJECT OF MAKING IT A MEANS OF COMMON DEFENSE ON THE PART OF CHINA AND JAPAN AGAINST FOREIGN INVASION COMING FROM THE DIRECTION OF URGA, QUITE APART FROM THE FURTHER OBJECT OF FACILITATING THE ECONOMIC DEVELOPMENT OF THE DISTRICTS THROUGH WHICH THESE LINES RUN."

With a full appreciation of what the construction of this outer strategic line of national defense meant to the safety of the Japanese empire and the integrity of China, Viscount Chinda asked the British government to lend its powerful support to the proposition that

"THESE TWO LINES BE BUILT AS SPEEDILY AS POSSIBLE, and, that "THE JAPANESE GROUP, AFTER DUE CONSULTATION WITH THE OTHER GROUPS, MAY BE PERMITTED TO UNDERTAKE THEIR CONSTRUCTION SINGLE-HANDED IN THE EVENT OF THE OTHER THREE POWERS ASSOCIATED IN THE NEW CONSORTIUM BEING RELUCTANT TO FINANCE IT."

This reasonable request of Japan to take the necessary steps to safeguard her own vital interests was overruled. Instead, she holds the assurance of the powers that the consortium will not direct any activities in those regions affecting the security of the economic life and national defense of Japan. In plain words, the strip of territory in Inner Mongolia along the line of the projected Taonan-Jehol and Chinchow-Aigun railways, is, for all political purposes, effectively neutralized, internationalized, closed in, and boarded up against any possible extension of Japan's single-handed activities in these regions. But it is not closed to the spread of Russia's activities from the other direction, and, under given conditions, Japan's strategic position in Manchuria is laid open to attack from its one vulnerable and exposed flank.

In order to preserve our conception of the integrity of China and the doctrine of the Open Door, Japan is expected to sit by and watch passively the reconquest of Mongolia by the Russians.

The Teutonized Slav Scourge

We must accept the fact that within the next decade there will take place a huge migration from European Russia and Germany into Siberia, the return of the Hun to his original breeding grounds on the Altai slopes. It is fair to estimate that the bulk of the 5,000,000 yearly increase of population in these two countries will turn their faces eastward towards the new Canaan overflowing with milk and honey, safe and far-distant from exactions of the allies and payments of reparations. There, they will find homes in the wooded and mineralized valleys of the Altais and push onwards over the passes into the grazing lands of Mongolia. The Germans have looked a long way ahead. They need coal and iron, copper and silver, manganese and antimony. They need

The Mining Districts of Russian Central Asia

Copper Mines at Yuspensky

gold. All these precious metals, the backbone of a nation's prosperity and ability to defend itself, abound in the new Land of Promise, the Altain-ula, the "Mountains of Gold." They need an inexhaustible food supply. The grain of the Siberian steppes, the beef and mutton of Mongolia can supply the demand of the world under proper direction. *"The Germans will go into that region in great numbers."*

When the leash that is holding in check the exodus is cut, the German rush will commence to garner in the pickings where the pickings are good. Under the direction of Germany, Russia will arise from her ashes stronger than ever, her natural insatiable land appetite whetted by the cravenous hunger of Germany. In the depths of Central Asia, safe from observation and interference on the part of the allies, the *Drang nach Osten* will be resumed. The old game will become a kindergarten reminiscence in the light of the future fierce, merciless campaign for the conquest of India, the humiliation of England and the punishment of Japan.

The picture is not overdrawn. It reflects faithfully the result of cold German calculations for the renewal of the conflict. No power on earth can stop the movement in its first stages if the Germans follow the policy outlined by Dr. Jung. Five, perhaps ten years, may come and go, before the menace will be felt. But it will come as sure as two and two make four, and within the life of the present generation. The Teutonized Slav hordes will emerge once more from the historic lair of the Hun, sweep down through Afghanistan into India and across the Gobi into China while the rest of the world looks on in impotent astonishment.

Japan, the Check Against Germany

There is only one safe and effective insurance against the growth of this menace ; a new four-power alliance between Great Britain, America, Japan and China, or the continuation of the Anglo-Japanese alliance and the right of Japan to take adequate single-handed measures to protect herself and China in strategic regions where the Teutonized Slavs can break through into Mongolia. The consortium has compelled Japan to surrender her right to advance beyond the Inner Mongolian border. This strip has been neutralized and the safety of Japan, of China, of the British empire, must now be defended by all the consortium powers. In attempting to safeguard the integrity of China against a possible aggression on the part of Japan, America has placed herself in the very centre of the future struggle for empire, and is compromised in honor to send its armies into Asia when the time comes to fight for the defense of China, Japan, and India, and the right of the yellow man to exist in lands set aside for their expansion by nature.

Article X in the Consortium

Mr. Lamont has likened the consortium unto a Far Eastern League of Nations working in with new China to maintain the peace of the Far East and thus promoting the peace of the world. He is right. The consortium, an offshoot of the parent league, is, for all practical purposes, an instrument which compromises the United States to dispatch its armies into Asia to preserve against external aggression the territorial integrity and existing independence of territories under control of the consortium powers. The American people voted against entering the League of Nations last November because of the provisions of Article X of the covenant. President Harding was elected in order to keep the American people from being railroaded into a foreign war without their consent. As matters now stand, America is out of the Big League, but remains the dominant power in the junior Far Eastern League, compromised, under given conditions, to step into the breach in Inner Mongolia and dispatch her armies to protect China and Japan against a menace from the direction of Urga, and take over her share of Japan's responsibilities under the terms of her alliance with Great Britain.

If Japan's privilege to protect herself and China against a menace from the direction of Urga is denied to her by the neutralization of Inner Mongolia, if she is prohibited from bringing pressure to bear upon Russia and carry out the objects of her alliance with Britain in the event that Russia again moves toward India, then it seems clear that the other powers will have to send their troops into the region to uphold the consortium doctrine.

If we analyse the situation closely, we will begin to sense the motives which must have helped to influence the British government to bring pressure to bear upon its ally to surrender her vital defense line to the consortium. Under the terms of the Anglo-Japanese alliance, Japan's position in these regions is greatly strengthened by bringing the United States into the storm centre of future strife. If neutralization or internationalization of the Chinchow-Aigun or Taonan-Jehol railway strip carries with it the determination on the part of the powers to defend the territory against a menace from the direction of Urga, then Japan loses nothing, England creates a new and formidable ally and America is permitted to gain her point. The history of the Paris conference is repeated.

The Consortium Sound

We are firmly convinced of the soundness and wisdom of the basic consortium policy and principles, and our presentation of this phase of the problem is in no wise intended to detract from its usefulness as an instrument to restore China's sovereignty and bring about international co-operation to place her upon her feet. We feel justified, however, in throwing the lime-light on the possible international political complications which may arise through the application of our policy in Inner Mongolia. We are not unduly interested in the position of Japan, except as a matter of international justice and the extension of principles to safeguard her security such as have been applied by the allies in protecting themselves in Europe and elsewhere. We are, however, deeply concerned about the position of the United States, and the possibility of its being drawn stern first into an Asiatic war in which we have no concern, simply to give effect to a rather confused idea about preserving the integrity of China the doctrine of the Open Door.

America Must Prepare

If Japan is not permitted to undertake single-handed the financing and construction of the Taonan-Jehol railway on behalf of China, and, if needs be, to extend the line from Taonan westwards across the Khingans into the Kerulen valley to Urga, for the purpose of erecting a barrier against the coming Teutonized Slav menace, then we should be honest with our partners, face the alternative and shoulder our share of the burden in financing these strategic frontiers and prepare for the day when the nation will be called upon to pay for meddling in matters in which it has little or no concern.

THE FAR EASTERN REVIEW holds to the conviction that the United States has no vital interests at stake in Inner or Outer Mongolia or Eastern Siberia, where forces are at work that will sooner or later plunge the world into another war. Our interest in China lies in the development of trade and industry, the preservation of the Open Door and the integrity of its territories within the Eighteen Provinces. If we insist upon applying our doctrines in debatable spheres, and neutralizing territory that hamstrings Japan's efforts to protect herself and China against a menace from the direction of Urga, then the nation should be fully acquainted with its responsibilities in the event of trouble.

The Wall Along the Rhine

If we insist upon neutralizing Inner Mongolia on paper and refrain from sending our troops there in the event of an invasion from the direction of Urga, then we must expect Japan will demand the right to defend her position single-handed. France looked ahead fifty years in demanding guarantees for her security against the come-back of Germany. Independent of the league, she insisted upon a separate treaty of alliance with the United States

and Great Britain obligating us to come to her assistance in case she was ever attacked. Notwithstanding that such an alliance constituted an unanswerable argument against the efficacy of the league guaranty to preserve its member states from attack, and a complete negation of fundamental American traditions against foreign alliances, President Wilson surrendered to Clemanceau and compromised the United States to come to the aid of France, in order to save the league. The big three erected a solid wall along the banks of the Rhine, and painted on it the blazing warning, "THOU SHALT NOT PASS!" The Germans read, understood its meaning, and with the innate sagacity of the race, turned about and headed the other way, towards Russia and Siberia. Here, in regions north of the Black Sea beckoned the opportunity for the development of an alternate strategic highway to India, China and world-mastery. No matter what may be the outcome of the Bolshevist experiment in government, a reunited Russia will demand restoration of territories carved out by the allies into new and independent states. In the very nature of things, Russia and Germany will come together and present a solid front against their late enemies. Russia will again fall under German influence and direction and welcome the technical guidance that will develop her vast Asiatic mineral and other resources. It is hardly to be expected that German capital will be reinvested in enterprises at home subject to insupportable taxation and reparations charges, when it can escape this by going into regions far removed from the possibility of allied interference. Neither is it probable that the German worker will rest content with his lot in the Fatherland, when Siberia and the Altais beckon to him as the Land of Promise. German capital will flow eastwards in an ever increasing stream. German emigration will follow its capital. Germans will press into Central Asia in great numbers.

Japan's Little Wall Demolished

Fifteen years ago, Japan fought Russia for the right to exist. A nation of fifty million pluckily threw down the gauntlet to the greatest military organization of modern times, with one hundred and eighty million people to back it up. The most convincing argument advanced by Clemenceau to influence Wilson and Lloyd George to enter into a separate treaty of alliance for the defense of France against attack, was the fact that Germany outnumbered her two to one, and at the present disproportionate rate of increase in the population of the two countries, within twenty-five years, Germany could overwhelm her with troops before the league could send assistance. Russia outnumbers Japan three, almost four to one. Japan's existence was saved in 1905 because the Russian giant had only one line of single track railway leading to the Far East. With the double-tracking of the Trans-Siberian or the construction of new lines reaching out to the Altais, Japan's position becomes increasingly untenable. In pre-war days when Germany built a new battleship, Great Britain laid down the keels for two. When Germany created a new army corps, France had to do likewise. When Russia built railways into Central or Eastern Asia they were primarily intended for conquest. Every mile of new Russian railway became the equivalent to a squad of soldiers advanced into the region so traversed, every section represented a batallion, every division an army corps. Russian railway activity in Asia, as far as military strategy was concerned, was equivalent to augmenting her standing army by a division for every hundred miles of new line. As Britain and France were compelled in self-defense to call and raise the German bluff in Europe, so Japan, with her national existence hanging in the balance, had to meet the Russian ante in the Asiatic game for empire. Russia's feverish preparations to resume the conflict compelled Japan to increase her army from year to year, burden her people with debt and bring upon them the stigma of militarism. Through the operations of French and Belgian financiers, Russia's position in China was steadily strengthened, and, when she took over Mongolia and applied in Paris for loans to push forward her strategic railways in this region, there was nothing left for Japan to do but extend her influence into Inner Mongolia and there at a safe distance from her main line of defense, erect a wall from Taonan to Jehol in order to safeguard her existence against the come-back of her formidable and vindictive enemy.

Although Russia is now in a state of collapse, she still has the manpower and the latent resources to recover quickly, and, like Germany, will some day attempt to settle accounts with her old foe. Especially will this be so, if Russia comes under the influence of Germany and the latter carries out her designs in Central Asia. If the guaranty of the league was considered inadequate to protect France against a future attack by Germany, then it seems superfluous to point out that the league is powerless to guaranty China or Japan against an attack from the direction of Urga. The Big Three readily agreed to vitiate the essence of the league by entering into an additional or super-alliance to satisfy the fears of France, but Japan who faces a menace three-fold greater, was told she must confide her security to an instrument admittedly defective to guaranty France against invasion. We erected a bulwark along the Rhine to safeguard France, then went into Inner Mongolia and tore down the wall so painstakingly erected by Japan! If the might of the civilized world cannot guaranty France against invasion in regions where its armies can be landed within a reasonable time, how can the league guaranty to Japan and China their security against an invasion from the direction of Urga or Central Asia? The inconsistency and injustice of the decision forcing Japan to place her trust in the league is too apparent to require stressing.

Whither Are We Drifting?

If the American people are willing to accept the definition that the consortium is a "Far Eastern League of Nations" guaranteeing to its members the safety of their territories against aggression, and they subscribe to the written assurance that Japan need have no reason to apprehend that the consortium would direct any activities affecting the security of the economic life and national defense of Japan, and are prepared to fight by the side of Japan to protect her own and China's territories and give effect to the terms of the Anglo-Japanese alliance, then the Inner Mongolian Wall will become a replica of the one along the Rhine. If they refuse to shoulder this responsibility, or make good the neutralization of the Inner Mongolian strategic strip, then the day must arrive when the paper wall will simply serve to screen the moves of a Teutonized Russia, facilitate the conquest of China and India and the downfall of Japan. Unless some more efficient guaranty is given to Japan that her national existence will never be placed in jeopardy, than the self-denying assurance of the big three, the world is headed for trouble in Mongolia. The remedy? Japan pointed it fairly and squarely in the confidential memorandum directed by Viscount Chinda to Earl Curzon; the speedy construction of the Taonan-Jehol railway and the right of Japan to finance it single-handed if the other groups in the consortium are reluctant to co-operate. If it is financed under the consortium, then it must carry with it the obligation of international armed intervention in the event Japan and China are ever menaced by an invasion from this direction. We cannot, in honor, escape this burden.

THE GERMANS WILL GO INTO THE ALTAI REGIONS IN GREAT NUMBERS AND DEVELOP THE MINERAL RESOURCES THAT WILL ONCE MORE PLACE THEM IN AN INVULNERABLE POSITION TO REALIZE THEIR DREAMS OF WORLD EMPIRE. THIS IS THEIR COLD, CALCULATED PROGRAM. WHAT IS THE COLD, CALCULATED PROGRAM OF THE ALLIES TO FRUSTRATE THIS BOLD PLAN? IS JAPAN TO BE PERMITTED TO OPERATE SINGLE-HANDED OR IN CO-OPERATION WITH CHINA TO PROTECT THEMSELVES, OR WILL THE UNITED STATES TAKE OVER THE DUTIES OF A CENTRAL ASIAN POLICEMAN AND GUARANTY THEIR INTEGRITY BY ARMED INTERVENTION? WHITHER ARE WE DRIFTING?

The Real Significance of the Consortium

Japan's Great Sacrifice in the Interests of World Peace

Reprinted from "The Far Eastern Review," March, 1921

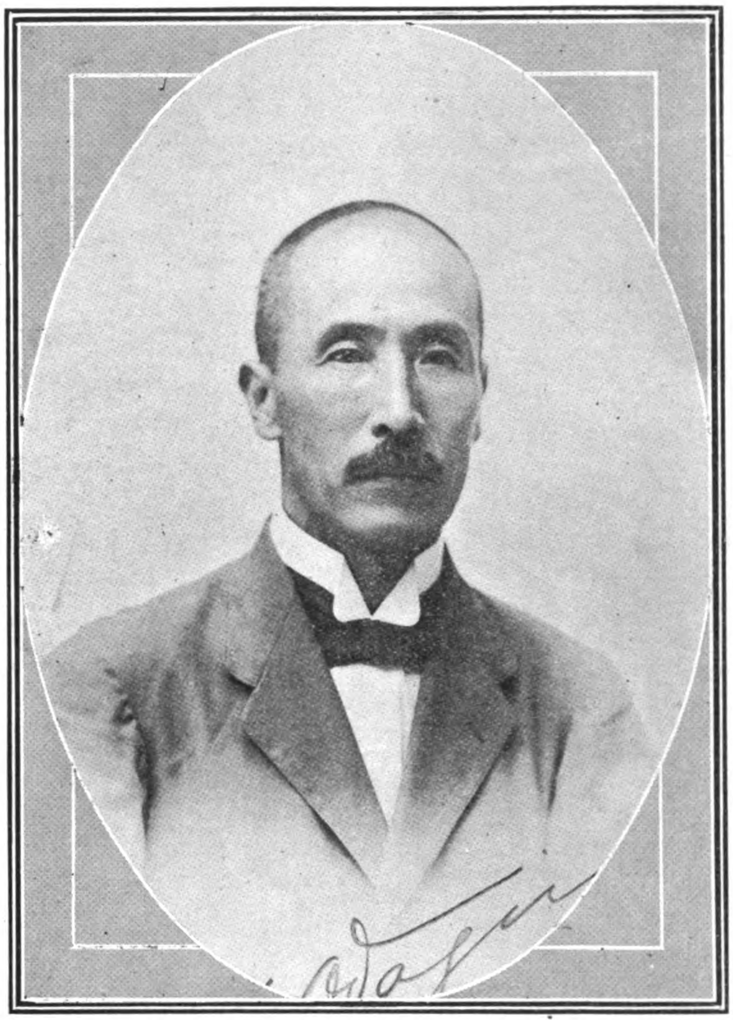
THE outstanding feature of the long-drawn-out consortium negotiations is the firm stand taken by Japan in defending her economical and strategical position in Manchuria and Inner Eastern Mongolia, and the final arrangement whereby her bankers entered the combination on a basis of equality with the other powers, while still retaining control over lines and extensions *upon which substantial progress has been made* and surrendering her most important strategic railway to advance the cause of world peace.

and more sympathetic appreciation of her vital necessity of preserving her national existence against the "come-back" of Russia.

When the new consortium idea was originated in 1917, the existence of the Li-Lobanoff Secret Alliance between China and Russia was still a secret, hinted at but vaguely in French diplomatic memoirs and other state papers. It was not until the Peace Conference that the Russians openly acknowledged the existence of this instrument, and then only to support certain rights in Manchuria. Other important facts concerning Russia's activities and policies

Mr. Nakaja Kajiwara

President of the Yokohama Specie Bank, and Official Head of the Japanese Group in the Consortium



Mr. Mannusuke Odagiri

Director of the Yokohama Specie Bank, and Official Representative of the Japanese Group at the Paris Meeting of the Consortium. Now representing the Japanese Group at Peking

The vital necessity of Japan to preserve her position in this part of Asia against the never changing policy of Russia has been fully explained in the columns of THE FAR EASTERN REVIEW. Under the title of "The Origin of China's Modern Troubles," this situation was clearly set forth in the January, 1921, number of this publication. It is impossible to intelligently grasp the arguments in support of Japan's national policy without the background provided by the above exposition of facts, and once they are understood the prevailing ideas about Japan's militarism and ambition to conquer or dominate China and encircle Peking with a network of strategic railways, must give place to a proper

in Eastern Asia were also revealed for the first time during the Peace Conference. Notably amongst these were the revelations of Mr. E. J. Dillon in his book, "The Eclipse of Russia," containing amongst other things, the inside history of the events leading up to the German occupation of Kiaochau. We also learned then of the existence of the secret agreements concerning Shantung entered into by Great Britain, France, Russia and Italy to support Japan's claims. All of these facts loudly proclaimed that the position of Japan in Manchuria and Mongolia could not be discussed from any idealistic viewpoint, or made to conform to President Wilson's program for ushering in a new era. The stern realities of the

intense play of national and racial forces operating in these regions forbade any meddling by well-intentioned statesmen with the moves of Japan to preserve her independence and security against the intrigues of a combination formed to accomplish her ruin. The facts, thus brought to light, convinced intelligent students of the situation that nothing but direst necessity compelled Japan to retain her strategic foothold in this section of China, in order to combat step by step the underhand moves of Russia to outflank and destroy her. This has special reference to Japan's interest in the Taonan-Jehol Railway and its outlet to the sea, which has been cited as proof positive of her sinister designs upon Peking and evidence irrefutable of her program of "military aggression." Facts which Japan has been prohibited from inviting special attention to for fear of exposing her program to Russia, together hand there entered her obligations under the Alliance with Great Britain. All evidence points to the fact that in 1912, Russia was preparing for another of her forward moves. At the time that she was amputating Mongolia from China, she was secretly pushing ahead her new military railway from Bokhara to the Afghan frontier. Evidence surrounding this forward move has come to light. So not only for her own protection, but to comply with her obligations to her ally, Japan was compelled to extend her influence into regions where she could more safely hold in check the coming menace.

The consortium negotiations reveal that the powers, failed to fully sense the real reasons for Japan's tenacious insistance upon recognition of her "special rights" in these regions, and ignored the cardinal feature of all China's past railway agreements, i.e., it is

JAPAN'S MILITARY LEADERS, INTO WHOSE HANDS IS ENTRUSTED THE SAFETY OF THE EMPIRE AGAINST AN INVASION "FROM THE DIRECTION OF URGA"

Prince Aritomo Yamagata
The Last of the Elder Statesmen

Lieutenant-General Giichi Tanaka
Japan's Minister of War

with events which permit us to entertain no illusions, must however dispel from the minds of all right-thinking people, this distorted conception of Japan's alleged double-dealings. A careful analysis of the facts will prove to the satisfaction of any impartial mind that Japan's interest in Inner Mongolia came as a direct result of Russia's annexation of that territory in 1912, followed by the immediate opening of negotiations in Paris to obtain the funds required to press forward her strategic railways in this region and so bring her armies nearer to Peking and enable them to approach Japan's position in Southern Manchuria from her unprotected flank. China's continued unrest, disorganization and general helplessness, made it imperative upon Japan to take immediate and energetic steps to safeguard her menaced position. On the other impossible to dissociate these seemingly innocent economical loans from international politics. The mere fact that a new international consortium was being organized to pool all these concessions, rights and options, and in which Russia was conspicuous by her absence, was, in itself, sufficient justification for Japan to watch carefully her step, and while accepting the principle of the proposition, to insist upon the acceptance of reservations which would permit her complete liberty of action if it ever became necessary to defend her existence.

Japan's reluctance to accept off-hand America's ideas concerning the pooling of all railway and industrial rights and options must be viewed in the same light and from the same angle that now divides the American people on the merits of the league of nations.

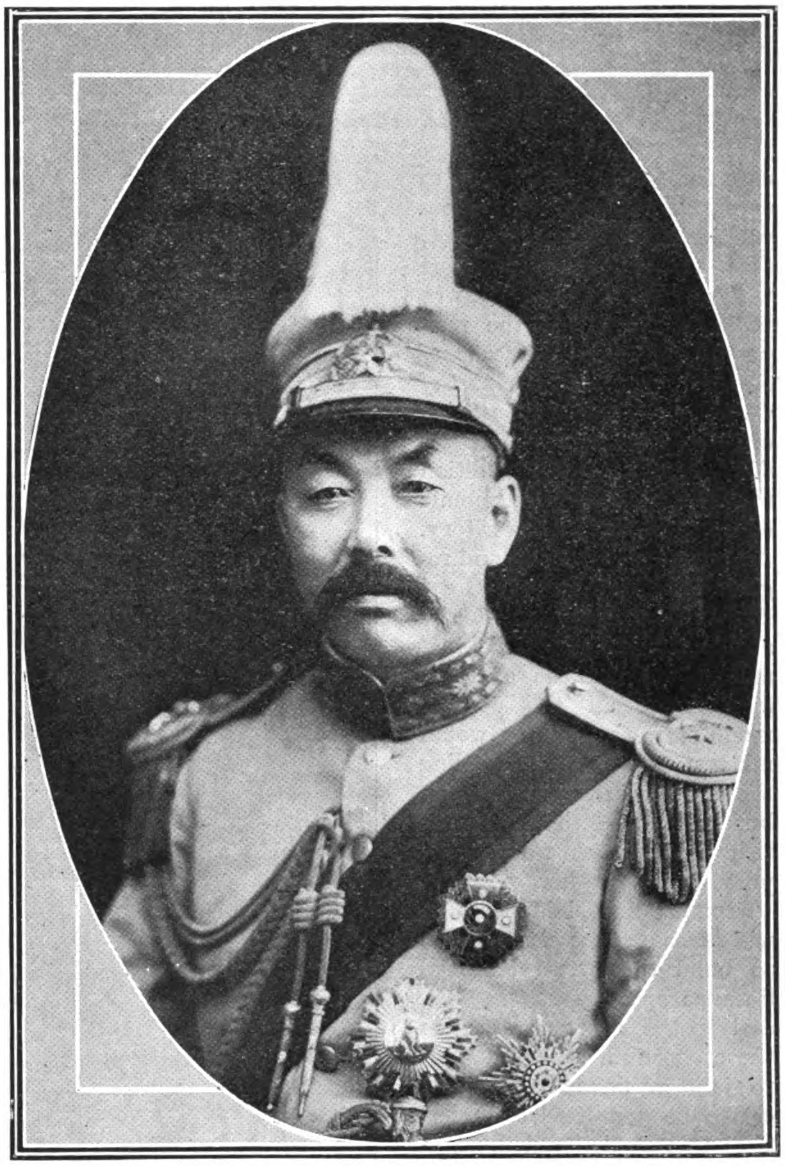
From our safe position, five thousand miles across the Pacific Americans can readily assume an altruistic attitude and adhere to lofty principles in the application of traditional policies towards China and Russia. Whatever happens, the people of America will not be called upon to pay the price. These burdens will all be piled upon Japan, the least able to stand them. If the American people had the slightest idea they might be called upon under the operation of the consortium agreement to send an army across the Pacific, in all probability, they would have scrutinized the consortium negotiations as closely as did Japan, and demanded certain reservations such as they now insist must be written into the convenant of the league. That these questions have not been asked by the American public is due entirely to the fact that the administration learned well the lesson of the dangers attached to open covenants openly arrived at, and surrounded the consortium negotiations with the utmost secrecy. All of which has been highly dangerous to the preservation of peaceful relations, providing the opportunity to enemies of Japan to misrepresent her case and hold her up before the world as conspiring to push her influence into China with the idea of dominating that country.

As America is in a safe position, so Great Britain and France can afford at this time to approach the problem with more or less altruistic considerations. Their possessions in Asia are not menaced by any power violating the neutrality of China. But Japan could not. She had already paid the penalty for her trustfulness in the ability of China to act as a buffer, and common-sense arose above sentiment and the fourteen points, and admonished her to beware of any idealistic rearrangement of Eastern Asia as long as the position of Russia in Mongolia remained undefined.

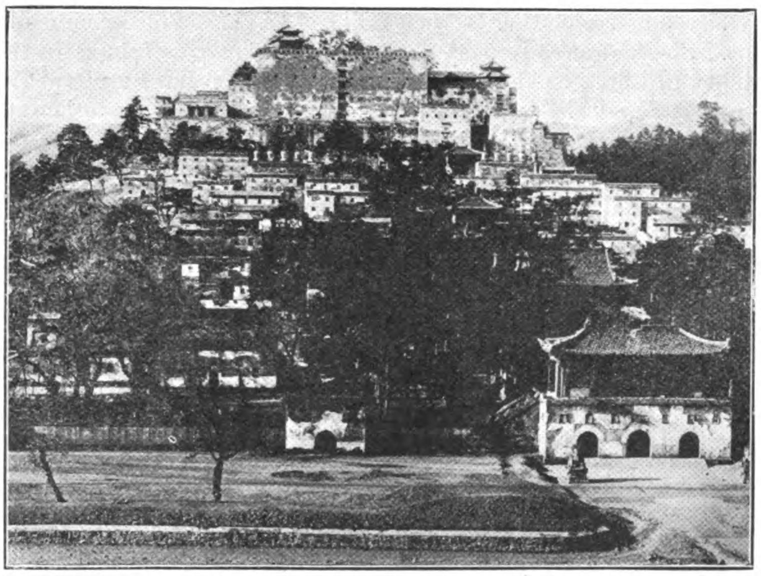
Japan's position throughout the consortium negotiations can therefore be readily understood, but even this had to be clearly and confidentially communicated to her ally, before Downing Street grasped the full meaning of what she was holding out for. It is a remarkable commentary upon the vagaries of modern diplomacy, that while the British government was straining every effort to protect the approaches to India from a possible return of its inveterate and traditional Asiatic enemy, that Earl Curzon, the highest British authority on Asiatic problems and policies, should have to be reminded that Japan's one menace to her national existence came from the same quarter. The British foreign minister entirely overlooked the important fact that Japan's interest in Eastern Mongolia dated from the year that Russia was secretly pushing her new military railway towards the north-east frontiers of India, and seeking loans in Paris to facilitate her advance upon Peking. Viscount Chinda was finally compelled reluctantly to throw diplomatic courtesy to the winds, in order to make clear the

CHINA'S MILITARY CHIEFS RESPONSIBLE FOR DEFENDING THE REPUBLIC AGAINST INVASION "FROM THE DIRECTION OF URGA"

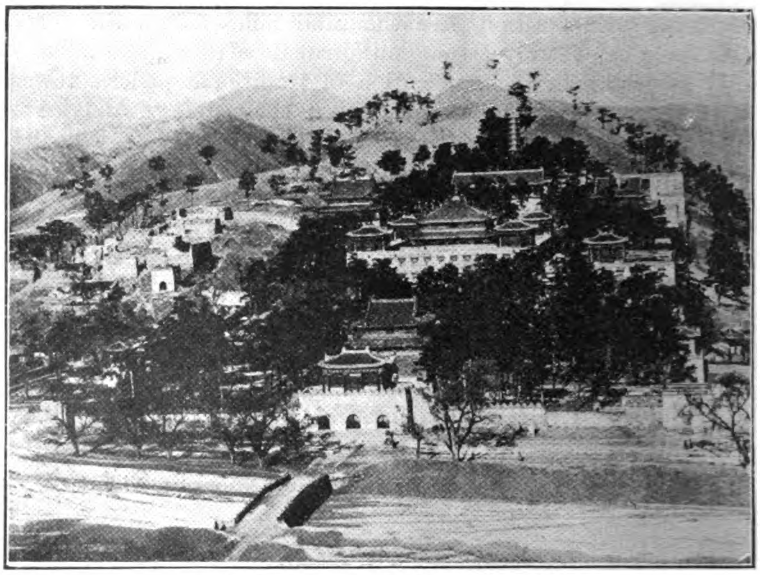
Marshal Chang Tso-ling
Tuchun of Manchuria and Actual Military Dictator of China, ordered by the Peking Government to Recapture Urga



General Sung Lih-cheng
Tuchun of Heilungkiang Province (Manchuria) also ordered to Recapture Urga



The Great Lama Temple at Jehol



The Old Manchu Palace at Jehol

case for Japan. It is well to emphasize this basic Japanese position. He said, in effect, that the Taonan-Jehol line with its branch to the sea, was projected solely for the purpose of making it *a means of common defence on the part of China and Japan against foreign invasion coming from the direction of Urga*, in addition to facilitating the economic development of the territory. He expressed surprise and regret that America and Great Britain interpreted this line as an eventual menace to Peking, and in view of the common interest of all the powers, made clear that Japan would make no objection to pooling the line within the consortium, but still hoped that the British government would support Japan in her position. Viscount Chinda laid stress on the desire on the part of Japan to build these two essential lines as speedily as possible, and if the other groups in the consortium were reluctant to join in financing it that Japan be permitted to undertake this single-handed. Viscount Chinda could not know at that time, that this line, or its counterpart, the Chinchow-Aigun which the American Group controlled was designed for the sole purpose of undermining Japan's position in Manchuria, and as a lever to force her to sell out the South Manchurian line to the Harriman group.

The insistence of Japan upon the right to construct these two lines as speedily as possible and to finance them independently, if needs be, brings under the lime-light the urgent reasons for their construction as an imperative strategical measure, for the preservation of Japan's position and as a basic line of defence for the further opening up of Mongolia to the colonization of the yellow race. That Japan finally accepted the assurances of her allies to respect her vital economical and strategic rights in this region is perhaps the most momentous feature of the entire consortium program. If this strategical outer line of defence is now to pass under international financial control it must carry with it the obligation of international armed support in the event that the neutrality of the line or the region is ever menaced from the direction of Urga. Great Britain, France and the United States, have therefore assumed a grave responsibility in coercing Japan to recede from her position and surrender her rights to the Taonan-Jehol line to the consortium, and must, in honor, accept the corrollary, and dispatch their armed forces to the region in the event that Japan is ever called upon to defend her position and preserve the territorial integrity of China. Present indications point to the inevitable occasion when, if the consortium holds together long enough, when the boys of America may again be called upon to cross the ocean and take part in a war of the races on the side of Japan and China in order to preserve Mongolia for the expansion of the yellow men.

General Chang Hsun

Known as the "Notorious Monarch Restorer," who Proclaimed the Empire on July 1, 1917, restored the Emperor, was defeated, proscribed and sought refuge in the Dutch Legation at Peking. He was recently restored to favor, and appointed Guardian of the Jehol Forest Preserve. This requires a force of about 5,000 armed "foresters."

Herein lies the gravity of the political complications

SOME MONGOL PRINCES

Prince Kung Shong-Mol-pu
President of the Mongolian and Tibetan Administrative Department at Peking

Prince Na Nieh-tu

Prince Choh-pu

A Grand Lama of Mongolia

created by the successful organization of the consortium. America and Great Britain have given birth to a new doctrine that we must be prepared to uphold unless wiser counsels prevail and a way found to settle the matter on a different basis. The consortium negotiations brought out the definite statement by Mr. Lamont and Earl Curzon that the American and British governments hold that "Mongolia and Manchuria are important parts of China." At the time Mr. Lamont made this statement, Chinese and Japanese troops were co-operating in Outer Mongolia for the purpose of ousting the Russians and restoring this province to China. The declaration was, therefore, inconsistent with existing conditions, the application of a paper doctrine to a desperate problem that Chinese and Japanese armies were then engaged in solving on the ground. Under the circumstances, how the American and British governments expected China to retain control over "one of its most important provinces" without the application of force passes all imagination. The inconsistency of the American stand was perhaps more clearly brought out in a report of the state department of November 23, 1919, and published in the New York *Times* of that date, which called upon the British government to exert a reassuring influence on its ally in the matter of the consortium, and wound up by saying "the United States would be happy to co-operate in arranging for an immediate advance to China for the purpose, amongst other things, of the disbandment of the Chinese troops raised under the Sino-Japanese war participation bureau, *and those troops now being employed against Outer Mongolia, which China is seeking to recover from Russia.*" Mr. Lamont in June, and Earl Curzon in August, declared that "Mongolia is an important part of China" and could not be excluded from the scope of the consortium, while on November 23, the state department declares that it is ready to permit the consortium to make an immediate advance to China for the purpose of disbanding the troops operating to restore this territory to Chinese sovereignty! The two declarations are incompatible. If Mongolia is considered to be a permanent part of China, then it will require something more than a mere paper declaration to make it so. When this same paper declaration provides for the disbandment of troops operating to give practical effect to the doctrine, then the only conclusion that can be safely arrived at, is that America and Great Britain were opposed to any Japanese co-operation with China in order to restore Mongolia to its rightful sovereign. Events are now transpiring in Mongolia that proclaim loudly the doctrine is premature. We cannot recall that such friendly solicitude for the preservation of China's integrity was ever formally or officially expressed by any of the great powers when the armies of the Czar stood behind Mongolia's declaration of independence and the corrupt deal which brought the country under the protection of Russia. Nor do we recall that any serious objection was raised in 1916, when Russia protested the construction of railways in Inner Mongolia on the grounds that such lines were in direct conflict with her established policy to close this territory to Chinese colonization. It remained, however, for the powers to take a firm stand in defense of China's interests, only when these seemed to be menaced by Japan. Such diplomatic inconsistencies and wilful ignoring of the vital problems of Japan have contributed to the formation of a settled conviction in the minds of intelligent Japanese that their higher interests are being subordinated to those of Russia, a clear case of the solidarity of the white against the yellow man. Barred out of the white man's territories in the Pacific and forced into

General View of Urga

of their policy, if ever put to the test. As matters now stand, it is safe to predict that no American, British, or French army, will ever be disembarked upon the shores of Asia to defend the integrity of China in the far-off depths of Mongolia or Sinkiang. Financial or economical pressure by the league of nations can never influence Russian movements in Central Asia or along the far-flung Mongolian borders and Altai slopes. If this be true, it would then appear that China will have to rely entirely upon herself to protect the territory which the powers now declare is one of her most important provinces. This, in turn, opens up the whole question of China's ability to cope with her northern neighbor, and the urgent necessity of arriving at some understanding whereby China and Japan can co-operate for the common defense of territories that will assure to the yellow race its right to exist and expand within the lands set aside by nature as their peculiar habitat.

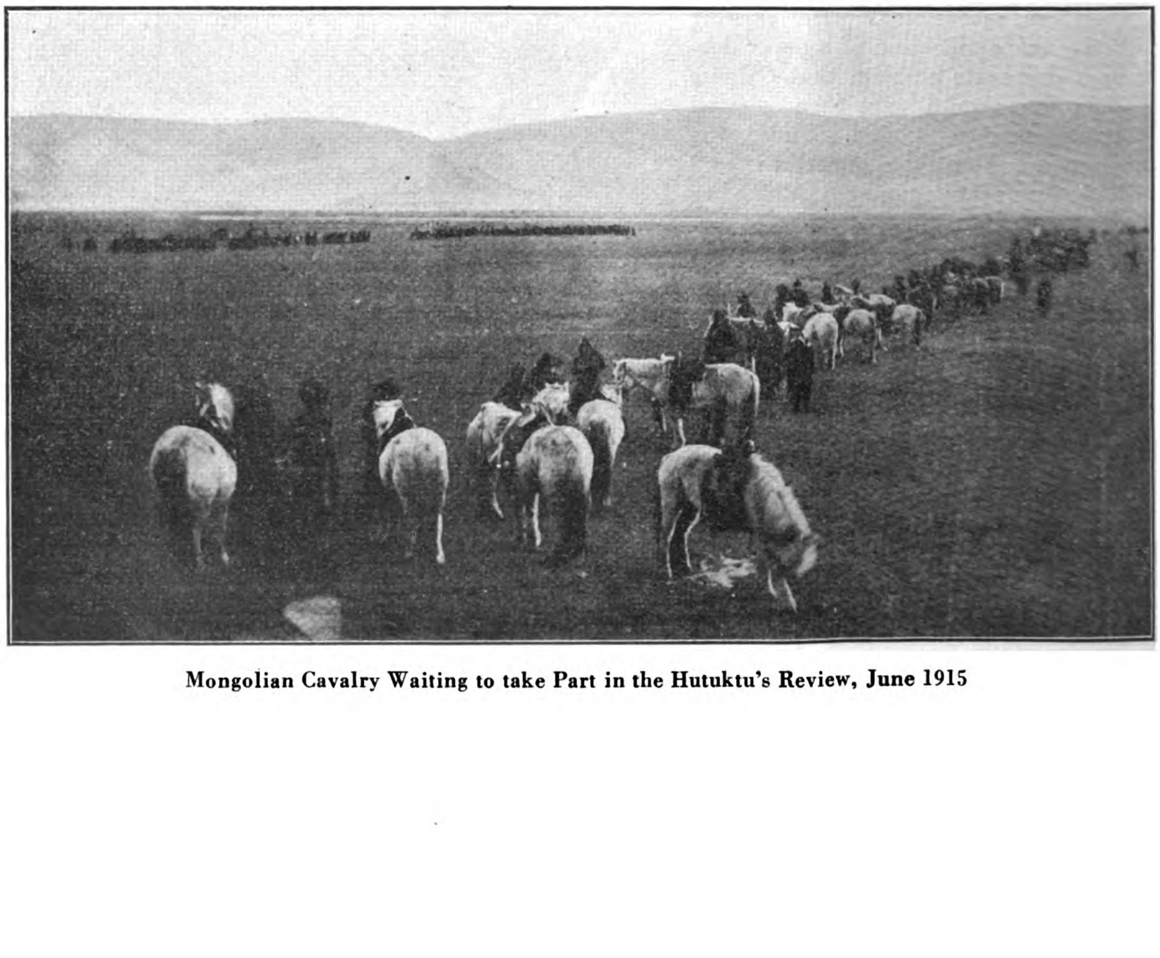
While this is being written, comes news of the fall of the Mongolian capital and the utter collapse of the Chinese forces. The Russians are again in Mongolia, and a bankrupt Chinese government is ordering armies from all sides for the recapture of Urga. There is no escape from the logic of the situation. America, Great Britain and the pressure of Chinese public opinion, have compelled the cancellation of the Sino-Japanese war pact for the common defense of these territories. Japan has been coerced into surrendering to the consortium her right to defend herself in South Manchuria along the Taonan-Jehol line, or Inner Mongolian borders. Mongolia is declared to be an important province of China, as far as Japan is concerned, but the law of the powers cannot be extended to Russia. The time may not be far distant, when America and Great Britain will be compelled to take action to give effect to the new doctrine, or step aside while Japan and China settle the future status of the territory to their own satisfaction.

Right here, it is well for us to pause and give serious thought to questions that are bound to obtrude after digesting the above statement of facts. The policy of the consortium powers holds that Mongolia and Manchuria are integral and important parts of

Asia to seek the future of the race, Japan finds on all sides the operation of the same set policy to oppose her expansion and defeat her plans for defense. We may be wrong, and if so, would gladly correct the error, but to our knowledge, not one word of honest protest was heard from America or Great Britain when Russia gobbled Mongolia in order to facilitate her descent into China and designs upon Japan, nor did China violently object or make any serious effort to save her territory. As soon however, as Japan takes the necessary steps to protect herself against a "menace from the direction of Urga," the western powers with common accord evince a sudden and deep interest in China's integrity and formally place on record *that "Mongolia is an important province of China"* in order to circumscribe Japan's preparations to defend her national existence.

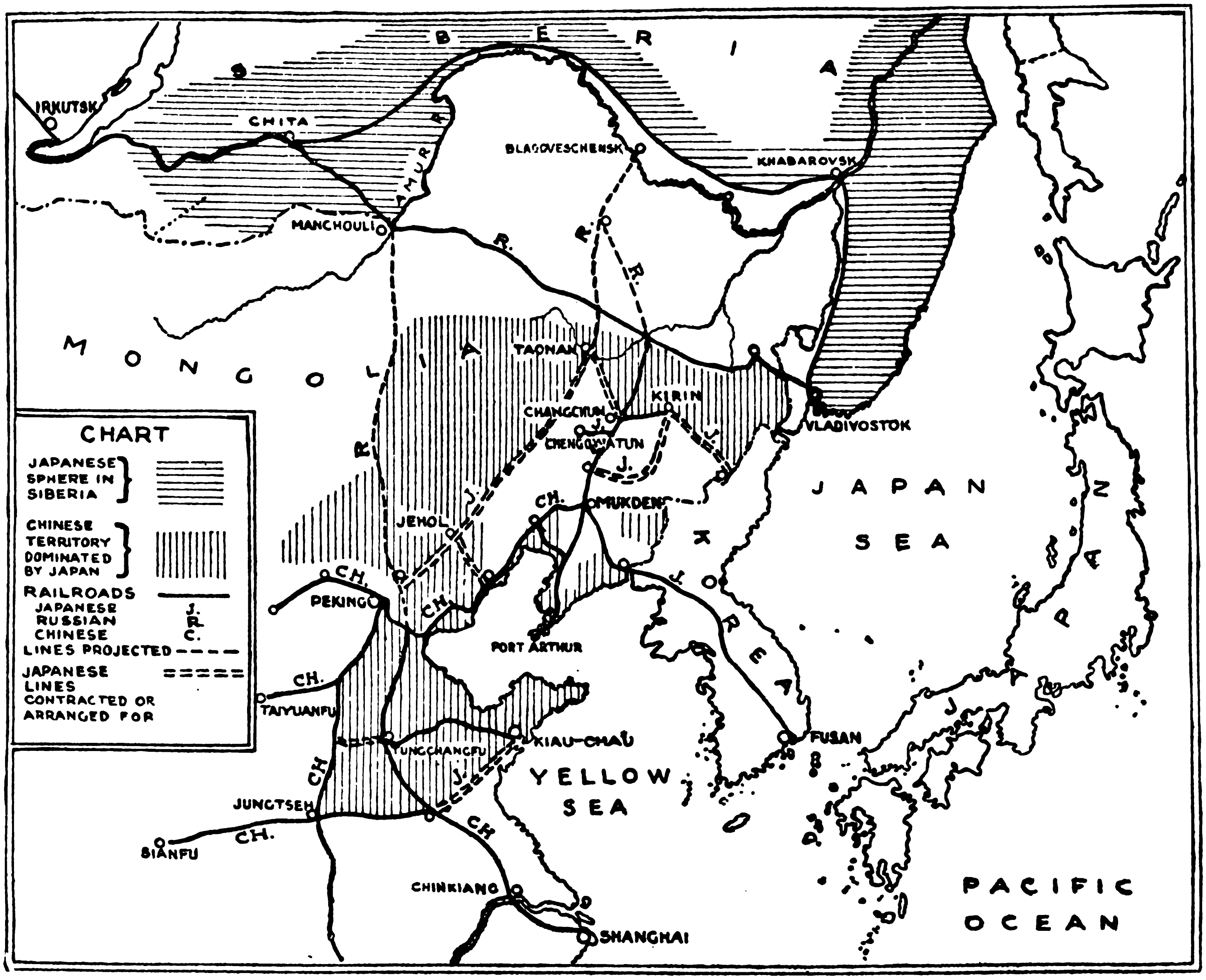
The declaration, however, clears the international political atmosphere in regard to the status of this debatable territory, which some time in the not distant future will become the battle ground of the races, the cockpit in which Mongol and Slav will contend for supremacy and the right to exist. A firm declaration of this nature should carry with it the implied assurance to China and Japan, that if it becomes necessary, the combined forces of the consortium powers will be employed to give effect to this status of Mongolia and preserve the province to China. In the event of future Russian agression or "peaceful penetration" in Mongolia, this declaration would seem to bind the powers to come to the full support of Japan to guarantee the integrity of China and the security of her own position.

In this somewhat belated declaration China and Japan are therefore to be congratulated, but at the same time it opens up the equally important question of how far the powers will go in support



Mongolian Cavalry Waiting to take Part in the Hutuktu's Review, June 1915

The Argument of the War Makers—The Other Side of the Taonan-Jehol Question

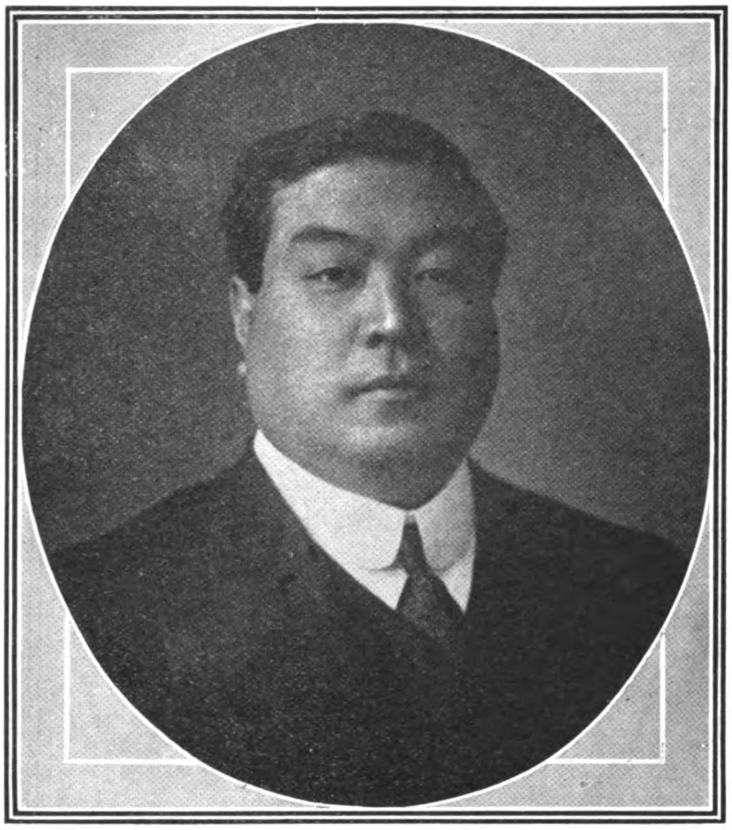


JAPAN'S ECONOMIC GRIP ON MANCHURIA AND MONGOLIA—RAILROADS CONTROLLED AND PROJECTED

The above map illustrates the arguments against acknowledgement of Japan's right to defend herself and China against a menace from the direction of Urga. This was prepared and circulated throughout the United States by "The Far Eastern Bureau." The lines marking Chinese territory dominated by Japan are purposely exaggerated. It will also be noted that the Taonan-Jehol line is extended beyond Jehol to the vicinity of Peking in order to accentuate the argument that it was devised for the purpose of dominating the Chinese capital. In reality, the line from Jehol to a seaport was never defined, though it is presumed that it would terminate at Hulutao, or in territory beyond the Great Wall, where a Russian army could not turn the Japanese flank in the event of hostilities, and place its base at Port Arthur in danger. The lines to the south of Peking are also skilfully drawn in order to exaggerate the argument of the "war-makers." This map is typical of the type of propaganda circulated in the United States in order to keep alive agitation making for ultimate hostilities.

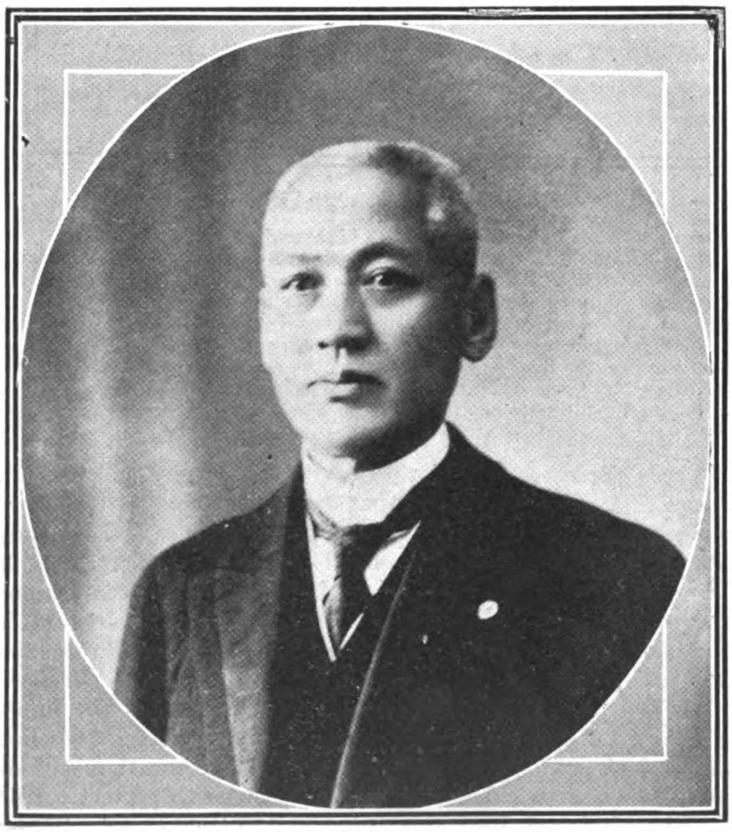
China. The consortium was organized to establish, amongst other things, the sovereignty of and to strengthen the central government of China. For all practical purposes Japan has been prohibited from operating alone or in conjunction with China to defend herself against a "menace from the direction of Urga." Therefore, China must step into the breach and discharge her international obligations by defending her own integrity. All perfectly proper. We now face the facts. Urga, the capital of Mongolia, has been captured by the reactionary Russian army under Baron Ungern. The Chinese troops have fled. Ten thousand peaceful Chinese, says the report, have been massacred. China is now called upon to defend her territory. The government is bankrupt. There are no funds to wage successfully a campaign in Mongolia. Question, (1). Will the consortium advance a loan of fifty, or even ten million dollars, to enable China to carry on the necessary military operations to give effect to its doctrines ? (2) In the event that the consortium refrains from financing China in a military campaign in Mongolia, will the American and British governments uphold its doctrine and dispatch an army to assist China ? Great Britain or America cannot consistently call upon Japan to undertake this task alone after their declarations, without surrendering their position and recognizing her paramount interest in these regions. (3). If a "menace from the direction of Urga" spreads and approaches the limits of southern Manchuria, or occupies territory along the line of the projected Taonan-Jehol railway, will the consortium powers prohibit Japan from taking the necessary steps to protect herself and send their troops into the region ? In other words, how far is Japan expected to expose herself to attack in order to meet with the desires of the other powers ? China's integrity must be

THE FINANCIERS OF NEW JAPAN. FIRMLY SUPPORTING



Baron Koyata Iwasaki
President of the Mitsubishi Bank

Baron Kichizaemon Sumitomo
President of the Sumitomo Bank, Ltd.



S. Minobe
Governor of the Bank of Chosen

Hon. Iwao Matsukata
President of the Jugo Ginko, Ltd.

THEIR LEADER THEY BROUGHT JAPAN INTO THE CONSORTIUM

Baron Zenemon Konoike
President of the Konoike Bank, Ltd.

Mr. K. Yamaguchi
President of the Yamaguchi Bank, Ltd.

Mr. Zengoro Yasuda
President of the Yasuda Bank, Ltd

Baron Mitsui
President of the Mitsui Bank

preserved. That is basic. Japan has subscribed to that doctrine. If China cannot guarantee her neutrality or defend her integrity, what is the answer? China has an excellent case, though impaired by the inability to defend herself. Who, then, will protect her? Japan has an excellent case, notwithstanding the mistakes of her military, but one opposed to the policies of America and Great Britain. What is just? Is it just that America and Great Britain should impose their views upon Japan, when they reject and resent any interference with their own vital policies? What should be done? Will we permit Japan to solve her own problems in her own way, or will we insist upon sending an army into Mongolia and Manchuria and so guarantee her position from any possible menace? Here we are getting down to questions that must be answered and answered rightly, and which may only be decided when we know all sides of the problem. If we are seeking peace in Asia, and not war, then the situation loudly calls for calm deliberation before a conference of the interested powers. The sooner these questions are answered, the better.

Mr. K. Takeuchi
Director of the Yokohama Specie Bank. Who Signed the Consortium Agreement at New York as Representative of the Japanese Group

would seem wise on the part of the consortium to be just to China, by surrendering these old political rights for equal mileage in a new national system. If the consortium fails to take such action, then it is another question that could come before a general conference for discussion and adjustment.

It becomes clear that Japan's intense interest in the Taonan-Jehol line arose from a desire to protect her position and facilitate China's penetration into regions that have been closed to her in the past, and which must otherwise remain closed to her in the future. A glance at the map will also make clear Japan's interest in the Taonan-Ssupinkai, the Taonan-Changchun, the extension of the Changchun-Kirin line to the sea and the Kaiyuan-Hailung-Kirin line, all opening up new country to development, and at the same time fulfilling the more important mission of strategic barriers, which confront Russia from Tsitsihar to Vladivostok. If any point in this barrier from the sea to Taonan should remain unprotected, it opens the door for Russia to walk through, destroy Japan's position, and force her back once more to the banks of the Yalu.

We can answer one of these questions right here. If the consortium powers are unwilling to support their doctrines and finance by armed force (this they are in honor bound to do in the event that Manchuria is ever menaced through a conflict in Mongolia) they may escape this obligation by adopting the railway program outlined in "A Square Deal for China." By surrendering all these old political railway rights to China in exchange for an equal mileage in a new system of national railways, the political character of the consortium holdings disappears, and it stands simply as a business organization to conduct business with the Chinese government on a business basis. As long as these old political railway rights and privileges remain pooled in the consortium, the powers concerned cannot escape the obligation imposed upon them to defend these rights. Once, however, they are all surrendered to the Chinese government, their political obligations cease and China becomes responsible for the maintenance of her neutrality. The American people would never consent to the dispatch of an army across the Pacific to protect a railway in Manchuria or Mongolia, especially when the American bondholders are amply guaranteed by the good faith and general revenues of the central government in addition to a mortgage on the physical properties and earnings of the lines. Yet under the present consortium plan this is what we are in honor obligated to do, or permit Japan to act independently in these regions. From more angles than one, it

THE HEADS OF THE KAJIMA BANK

Mr. K. Hirooka, President

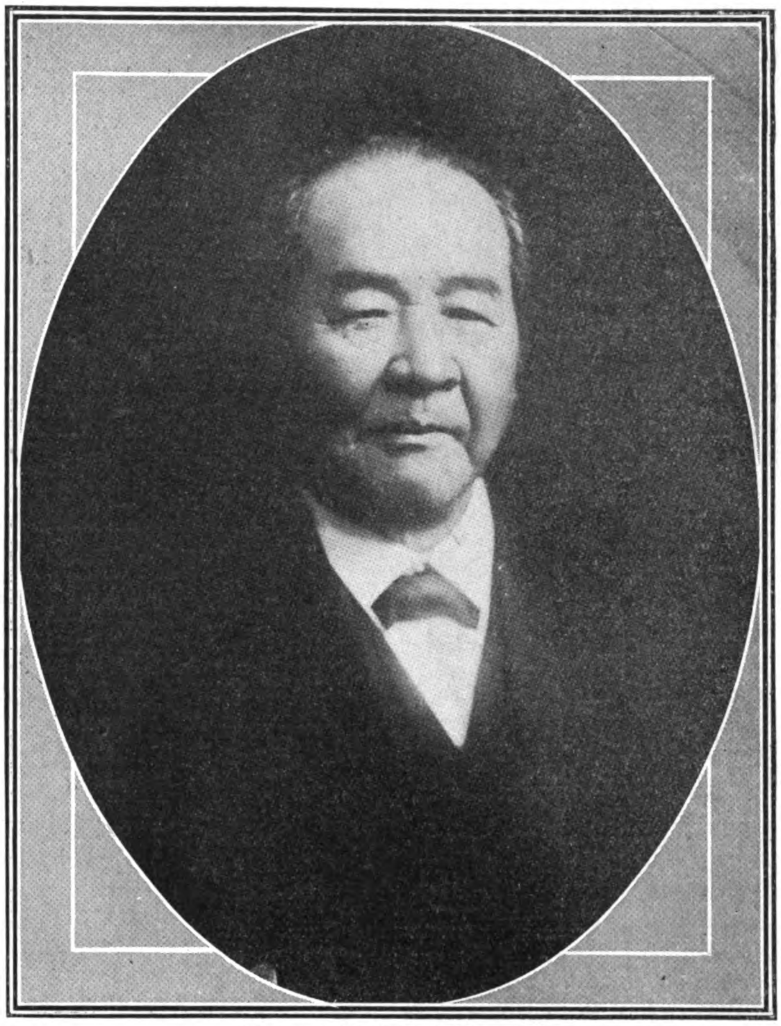
Mr. Y. Hoshino, Managing Director

If the American and British governments will face the situation in the light of these facts and lend their friendly co-operation to the furtherance of Japan's plan for the real preservation of China's integrity and her own security, the great cause of world peace will be materially advanced. This is the true function of an international consortium in assisting China to establish a representative government and maintain her sovereignty over her outlying provinces. The purely economic and commercial problems of China will solve themselves automatically under the guiding hand of the consortium leaders and an honest representative government, in which the military is subordinated to the civil authority and the power to make loans vested in a parliament and responsible cabinet. Administrative loans can then be advanced without fear of their being diverted to the capacious pockets of military grafters, railways will be built, industries established and China slowly led along the road to stability and prosperity. But unless attention is also given to Japan's vital problem and China assisted to regain full sovereignty over her largest outlying provinces, the consortium program will in the end, prove abortive, and loans advanced for other purposes become a total loss. The consortium must serve as an international instrument for Asiatic peace as well as for the economic reorganization and development of China. The same principles that guided the drafting of the Peace Treaty insuring to France, Italy,

Britain and other nations guarantees that their frontiers will be protected against future aggression, must be applied to China, not only for her own sake, but for the security of Japan. If such guiding principles are ignored, then the other powers must expect that Japan will insist upon her right to take the necessary single-handed steps to provide her own guarantees.

This is the real significance of the consortium negotiations, Japan has protected her position, in the same way that her allies have applied the law of self-preservation in other parts of the world, and has received their assurance that her vital interests will be respected. It closes a disagreeable chapter in international diplomacy that might well have led to serious complications because of the absence of mutual understanding and to the adherance to secrecy that characterized the negotiations. We enter upon a new epoch in Far Eastern politics. Japan and America are now partners. The only danger that the harmony of the consortium may be destroyed lies in the reluctance of China and her friends to accept the logic of the facts. Strenuous efforts are being made and will continue to be made to keep alive the agitation against Japan and create the suspicion in the minds of her partners that she is working against them in an underhand manner. Were China left to her own inclinations, it would not be difficult to bring about a happy rapprochment with Japan and cement these relations by a new understanding that would receive the full support of the other great powers. It is almost hopeless, however, to look for such a practical and statesmanlike outcome to years of misunderstanding and cross-purposes as long as secret and confidential propaganda emanating from Peking continues to poison the international atmosphere.

Turning from the purely political to the practical business side of Japan's exclusion of her other lines in Manchuria from the scope of the consortium, this is in exact accord with the provisions of Article 2, of the Agreement signed at Paris on May 12, 1919, which states that: "Existing agreements relating to industrial undertakings upon which it can be shown that substantial progress has been made may be omitted from the scope of this agreement." Pursuant to this strictly business compact, the Japanese have excluded those lines which act as direct feeders to the main South Manchuria railway, and upon which substantial progress has been made. The Kirin-Huining and Taonan-Changchun lines, while apparently entirely new and distinct propositions are simply the logical extensions of the completed Changchun-Kirin Railway; the Chengchiatun-Taonnafu line is the extension of the Ssupingkai-Chengchiatun line now in operation. These lines come within the direct application of Article 2 of the consortium agreement. The Kaiyuan-Hailung-Kirin feeder is so vitally a part of the South Manchuria system, that it could not safely be included in the consortium without giving rise to serious clashes of interest in the very heart of Japan's defensive and strategical zone contiguous to Russia's Far Eastern military capital at Harbin. The Sinmunfu-Mukden line, while under a Japanese loan agreement, has been operated for many years as an integral section of the Peking-Mukden Railway under the direct management of the Chinese ministry of communication.



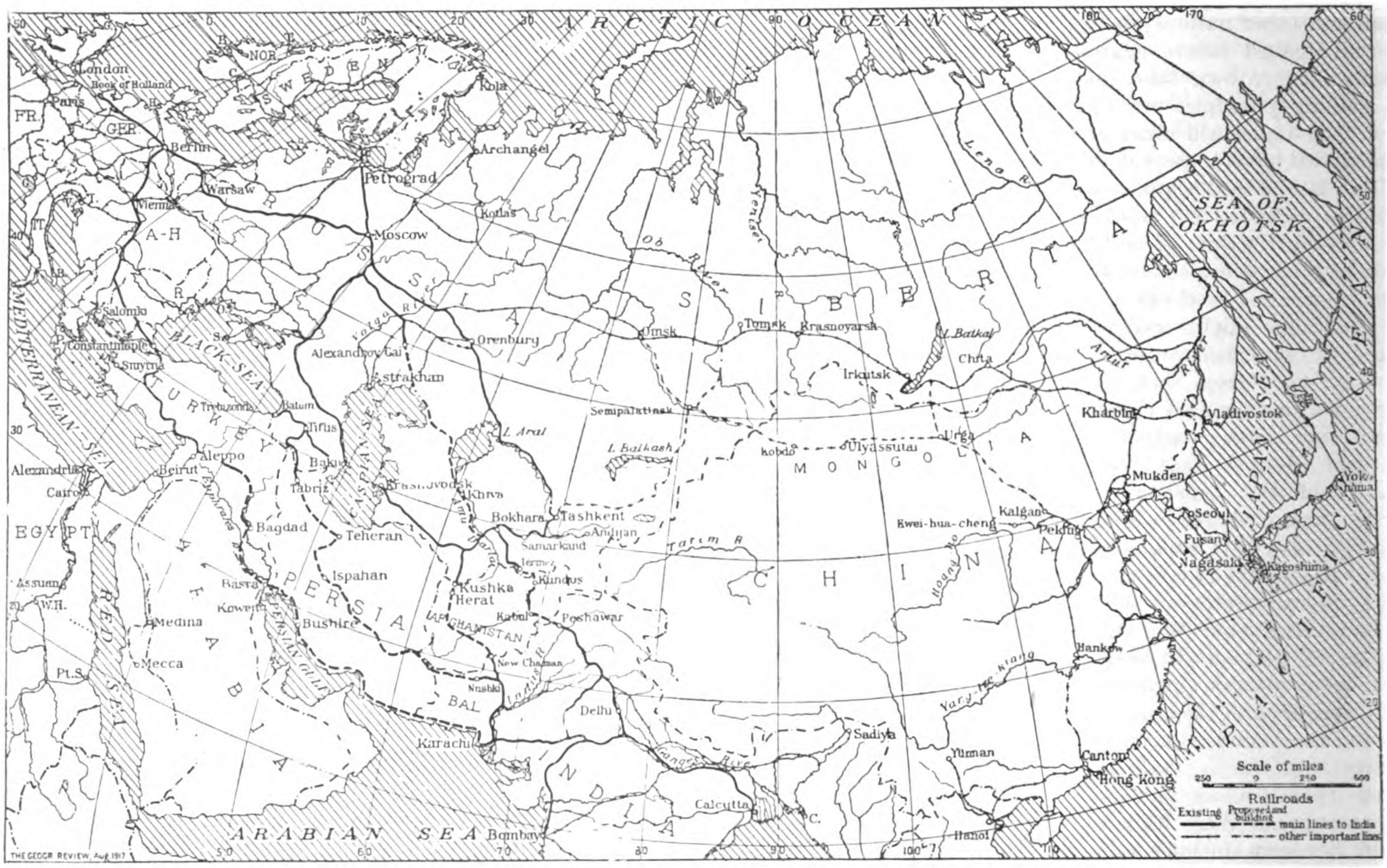
Viscount Yeiichi Shibusawa

The Venerable Philanthrophist and Financier of Japan whose last Years are being devoted to creating Harmony between Japan and America and the Adoption of a new Policy Towards China

There was never any real objection on the part of the other powers to Japan's claims to special consideration in the control of these lines, but it required considerable correspondence to make this point absolutely clear to the Tokyo authorities.

The whole controversy surged around the question of the inclusion or exclusion of the Taonan-Jehol and the Taonan-Changchun lines, and the Japanese government held out to the last moment against all arguments that would deprive them of this means of self-defense in the event of an emergency. The problem was solved in Japan through the efforts of the Japaense bankers led by Mr. J. Inouye, governor of the Bank of Japan, and other firm friends of America who influenced the government and military leaders to recede from their position on the Taonan-Jehol line and trust to the good-faith of America and their ally, to see that Japan's vital interests were never placed in jeopardy by the operation of the consortium. So sure were the Japanese bankers that they could ultimately arrive at a happy and harmonious solution without unduly injuring the higher interests of the empire, that Mr. Lamont was informed that his plan would be accepted. Upon this assurance Mr. Lamont voyaged to the Far East and happily concluded upon the ground in personal contact with the Japanese leaders, the agreement which has finally brought the two nations into harmonious co-operation and partnership for the furtherance of the consortium program.

When viewed in the light of all the facts surrounding these negotiations the final credit for their successful outcome must be divided by Mr. Lamont with Mr. Inouye and the leaders of the Japanese group, whose whole-hearted acceptance of his plans, friendly desire to co-operate with America and trust in the good-faith of the American government, finally overcame the sterner opposition of their own military element into whose hands has been entrusted the safety of the empire against attack "from the direction of Urga." It is too early to indulge in prophecies, but it is safe to say that Japan's surrender of her most vital line of outer defense to the consortium in order to demonstrate her friendship with America and China, will stand as one of the highest examples of national self-sacrifice to the cause of world peace and Pacific harmony.



OUTLINE MAP OF EURASIA SHOWING THE PROPOSED CONNECTIONS BETWEEN THE RAILWAY SYSTEMS OF EUROPE AND INDIA TOGETHER WITH THE MAIN LINES OF EASTERN ASIA

(From the Geographic Review)

THE PROBLEM OF ASIA

Reprinted from "The Far Eastern Review," January, 1921

The Advance of Russia Towards India and China

Russian railways in Asia were designed for Conquest. Every mile of new line became equivalent to a squad of soldiers, every section a batallion, every division an army corps. Russian railway activity in Asia was equivalent to augmenting her standing army by a division for every hundred miles of new lines built

SIR John Jordan tells us that nearly all of the trouble that has arisen in China since 1895 was due to Li Hung-chang's diplomacy. Then, it was, as Sir John reminds us, that Li came under "the imperialist influences of Germany and Russia." The visit to Moscow of the mandarin marquis and the secret treaty of 1896 are deemed by the most distinguished British "Old China Hand" the sources from which have come most of the modern political woes of China.

The Russo-Chinese secret alliance of 1896 is the most vital fact in the modern history of China and it proved the decisive fact in the modern history of Russia. It brought about the Russo-Japanese war and that war caused the first Duma revolution which sowed the seeds that were ultimately to raise Russia's red crop of Bolshevism—the sanguinary harvest of 1917.

Dr. E. J. Dillon, in his *Eclipse of Russia*, gave us the inside story of the triple alliance against Japan; the Russo-French-German combination of 1895 that revised the terms of the treaty of Shimonoseki and compelled the retrocession of the Liaotung littoral. At Paris, in 1919, Mr. Sazanof, president of the Russian council of ministers, disclosed to the supreme council of the peace conference the text of the alliance signed at Moscow in 1896 by the Marquis Li and Count Lobanov-Rostovski, who was at that time foreign minister to the newly-crowned Czar Nicholas. The English translation of this historic document is reproduced here for the benefit of serious, impartial students of Far Eastern problems. Its basic importance will be recognized at a glance.

While British, French, German and Japanese diplomats were well-informed as to the existence of this alliance—reference was made to it in European state papers and the London *Daily Telegraph* printed a version of it in 1910—it was not until the spring of 1919 that it was formally admitted by Russia. On May 17, 1919, the Russians in Paris, through the medium of Mr. Sazanof, entered a formal caveat against revision of any of the Russo-Chinese commitments, presumably including the Moscow bargain.

In January of this year, there was published in *World's Work*, the memoirs of Count Witte, in which he gives the following account of the signing of the secret treaty of alliance which was destined to plunge Eastern Asia into war.

" As a result of my negotiations with the Chinese statesman, we agreed on the following three provisions of a secret pact to be concluded between Russia and China :—

" 1. The Chinese empire grants us permission to build a railroad within its territory along a straight line between Chita and Vladivostok, but the road must be in the hands of a private corporation. Li Hung-chang absolutely refused to accept my proposal that the road should be either constructed or owned by the treasury. For that reason we were forced to form a private corporation, the so-called Eastern Chinese Railroad Corporation. This body is, of course, completely in the hands of the government, but since nominally it is a private corporation, it is within the jurisdiction of the ministry of finances.

" 2. China agrees to cede us a strip of land sufficient for the construction and operation of the railway. Within that territory the corporation is permitted to have its own police and to exercise full and untrameled authority. China takes upon herself no responsibilities with regard to the construction or operation of the road.

" 3. The two countries obligate themselves to defend each other in case Japan attacks the territory of China or our Far Eastern maritime possessions.

" I reported the results of my negotiations to His Majesty and he instructed me to take up the matter with the foreign minister. I explained to Count Lobanov-Rostovski that I had come to an oral agreement with Li Hung-chang regarding the provisions of a secret Russo-Chinese pact, and that the only thing left now was to embody the agreement in a formal written instrument. After listening to my statement of the terms of the agreement the count took a pen and wrote the text of the treaty. The document was drafted so skilfully that I approved it without the slightest reservation. The count told me that the following day he would submit the document to His Majesty and return it to me if it was approved by the emperor.

" When the text of the treaty came back to me, I discovered, to my great surprise, a substantial alteration in the paragraph dealing with the Russo-Chinese union against Japan. The words *par le Japon* (by Japan) were missing from the text. In its altered version the pact provided for the mutual defence of the two countries in the event of an attack upon either of them not by Japan alone, but by any other power. I was actually frightened. The alteration was of momentous importance. A defensive alliance against all the other powers was quite different from such an alliance against Japan. Several European powers, including France, our ally, and England, have interests in China, and to obligate ourselves to defend China from all those countries meant to arouse them all against us and to invite no end of trouble.

" I immediately went to see the emperor and laid the matter before him. He instructed me to ask Count Lobanov-Rostovski to make the necessary correction in the text of the agreement. The situation was very delicate. I was much younger than the foreign minister and much below him in official rank. For me to correct what he had done was to affront him and arouse him against me. I made known my apprehensions to His Majesty and asked him personally to take up the matter with the count. He agreed. Soon afterward we all went to Moscow to attend the solemnities of the coronation.

" In Moscow I devoted much time and attention to Li Hung-chang, for I considered it a matter of primary importance to the state to bring our negotiations to a successful consummation. The Russo-Chinese alliance meant two things : first, a great railroad extending as far as Vladivostok on a straight line without curving northward along the Amur River ; and, second, firmly established peaceful relations with our neighbor, the Chinese colossus.

" The emperor assured me that he had spoken to the foreign minister and that the latter had promised to restore the original version of the treaty. His Majesty spoke so definitely that no doubts were left in my mind on the subject. After this I met Prince Lobanov-Rostovski several times, but neither of us referred to the matter.

" In the meantime I continued my negotiations with Li Hung-chang to the end of inducing the Chinese government to grant the concession for the construction of the Eastern Chinese section of the Trans-Siberian to the Russo-Chinese Bank, which was already functioning. At the same time I prepared an agreement with this bank, whereby it ceded the concession to the Eastern Chinese Government Corporation soon to be formed by the Russian government.

Li Hung-chang

" Finally, we set the day for the signing of the secret agreement, the signatories on the Russian side being Count Lobanov-Rostovski and myself, and on the Chinese side Li Hung-chang, who had received instructions directly from Peking. It was agreed that we would meet in the office of the foreign ministry and there sign the document with all the formalities prescribed by law and etiquette. On the appointed day the Russian plenipotentiaries with the officials attached to them and Li Hung-chang with his retinue gathered in the office of the ministry and were seated around a table. Count Lobanov-Rostovski opened the session and declared that both sides were familiar with the text of the agreement, that the instrument had now been carefully copied by the secretaries and that it could be signed without reading. Nevertheless, he said, he was perfectly willing to let the Chinese re-read the document, if they so wished. Accordingly a copy of the agreement—the document was to be signed in duplicate—was handed to Li Hung-chang's assistants. I took the other one and began to scan it, suspecting no evil. Suddenly, to my horror, I noticed that the paragraph relating to our defensive alliance with China had not been changed, notwithstanding His Majesty's assurance, and that, unlike my version, it provided for an obligation on our part to defend China from an attack by any power.

" I approached Count Lobanov-Rostovski, called him aside and whispered in his ear that the provision regarding the defensive alliance had not been changed in accordance with His Majesty's will. ' My God ! ' he exclaimed, striking his forehead, ' I completely forgot to tell my secretary to insert that paragraph in its original wording.' Nevertheless, he was not in the least taken aback. He looked at his watch. It was a quarter past twelve. He clapped several times to call the servants and said, turning to

Count Cassini

the gatherings: 'It is past noon. Let's take luncheon. We will sign the agreement afterward.'

"We all went to have luncheon, except the two secretaries, who, while we were lunching, copied the document and made the necessary correction. These new copies were quietly substituted for the ones which had been circulated before luncheon and were duly signed by Li Hung-chang, on one side, and by Count Lobanov-Rostovski and myself, on the other.

"The agreement was an act of the highest importance. Had we faithfully observed it, we would have been spared the disgrace of the Japanese war and we would have secured a firm foothold in the Far East. Anticipating the course of events, I may say here that we ourselves broke the agreement and brought about the situation which we are now facing in the Far East. It was an act in which treachery and giddy-headedness were curiously mingled.

"The agreement was ratified without further delay by both the Chinese and our emperor. This agreement was to serve as a basis for our relations with China and for our status in the Far East generally.

* * * *

"The Chinese government was reluctant to comply with our demands. The empress regent, together with the young Chinese emperor, had gone to her summer residence, in the vicinity of Peking. Under the influence of English and Japanese diplomats, she obstinately refused to make any concessions. Seeing that under the circumstances, should we fail to reach an agreement with China, bloodshed was likely to take place, I wired to the agent of my ministry in Peking to see Li Hung-chang and Chang Ing-huan, another high official, and to advise them in my name to come to terms with us. I instructed the agent to offer these two statesmen valuable presents amounting to 500,000 and 250,000 roubles respectively. This was the first time I resorted to bribery in my negotiations with Chinese."

Count Witte confesses manfully that Russia herself broke the agreement, and although he does not specify just how this was done, it is inferred that Russian co-operation with the allies in the Boxer year, and flooding Manchuria with troops, constituted the breach of faith. However, the damage was done. As a consequence of the treaty terms Russia was fortified in Manchuria and reaching out for control Korea. In view of Count Witte's confession, the action of Mr. Sazanoff at Paris in disclosing the treaty as one which Russia still held as binding can only be taken as another instance of trying to take advantage of China. It is a fact, however, that the key to the Chinese political puzzle has been the Li-Lobanof Alliance. The secret diplomacy of Li, Count Cassini and the subtle old masters of the "Singers' Bridge" compelled England and Japan to act in defense of their Far Eastern interests. A careful reading of the provocative correspondence carried on by Emperor William with Czar Nicholas justifies each and all of the steps that were taken by the London foreign office and the elder statesmen of Nippon.

Every important move made by Great Britain in China since 1895 has been one of self-defense, a constant struggle to outwit *secret* Russian manœuvres by *open* moves and to preserve her own Asiatic empire. In the same way, every move made by Japan in Asia has been dictated by the law of self-preservation—the determination of a nation of men to safeguard their own empire, constantly jeopardized by the advance of Russia.

The Menace of Russia

"Approach as near as possible to Constantinople and India. He who establishes himself in these two places will be true sovereign of the world." These are not the words of a German strategist, but the legacy of advice that Peter the Great bequeathed to his successors; a legacy that was followed out to the letter.

"The more powerful Russia becomes in Central Asia, the weaker does England become in India, and, consequently, the more amenable in Europe," said General Sobolev. Russia attempted no concealment of her real aim. India was, and still is, to Russians, the land of fabulous wealth.

"India is the key-stone of the British empire; without India, the empire would cease to exist. British policy in Asia must be moulded from the standpoint of its effect on the preservation of British domination in India. . . The concession of a port upon the Persian Gulf to Russia by any power, should be regarded as a deliberate insult to Great Britain; as a wanton rupture of the *status quo*, and as an intentional provocation to war; and he should impeach the British minister, who was guilty of acquiescing in such a surrender, as a traitor to his country," said Lord Curzon, the greatest of England's Indian viceroys.

In these two quotations, the problem of Asia is laid before us; Russia's open determination to conquer India, and Britain's firm resolve to defend her possessions. The present generation forgets that twenty, thirty years ago, Russia was the menace to world peace. Russia was then running amuck throughout Asia, slaughtering, devastating and annexing the remnants of the older civilizations. The Caucasus and Trans-Caspia were conquered, Mery was annexed and the legions of the Czar were at the Gates of Herat, the outwork of India. With Askabad as a centre, a network of Russian intrigue was spread over southern Persia to establish the Czar's supremacy on the Persian Gulf and the Indian Ocean through means of a railway. "In order to be there before the Germans," they said. Her right to such concession became an article of faith on the banks of the Neva, and was soon evolved into a sort of bureaucratic Monroe doctrine. Northern Persia was brought under the influence of the Czar through the completion of the Trans-Caspian railway.

"Every kingdom, principality, or tribe to which Russia has extended 'protection,' has eventually been appropriated into the Muscovite empire. Russia has seldom, if ever, permanently retreated from any spot where her authority has been established." Where her flag is once raised, it stays, unless hauled down by superior force. "The clue to her success is the intelligent ruthlessness of Russian warfare, when warfare must be waged. When she sends out a punitive expedition, no mercy is shown, even women and children being sacrificed in order to further her aim of a complete subjection. Skobeleff sounded the key-note of Russian policy, when he said "my system is this—to strike hard and keep on hitting until resistance is completely over; then at once to form ranks, cease slaughter, and be kind and humane to the prostrate enemy. By this system, Russia has absorbed more territory, assimilated a greater number of different peoples, and fought more border wars than any other modern nation, and in the whole course of her ceaseless march there has never been a single uprising against

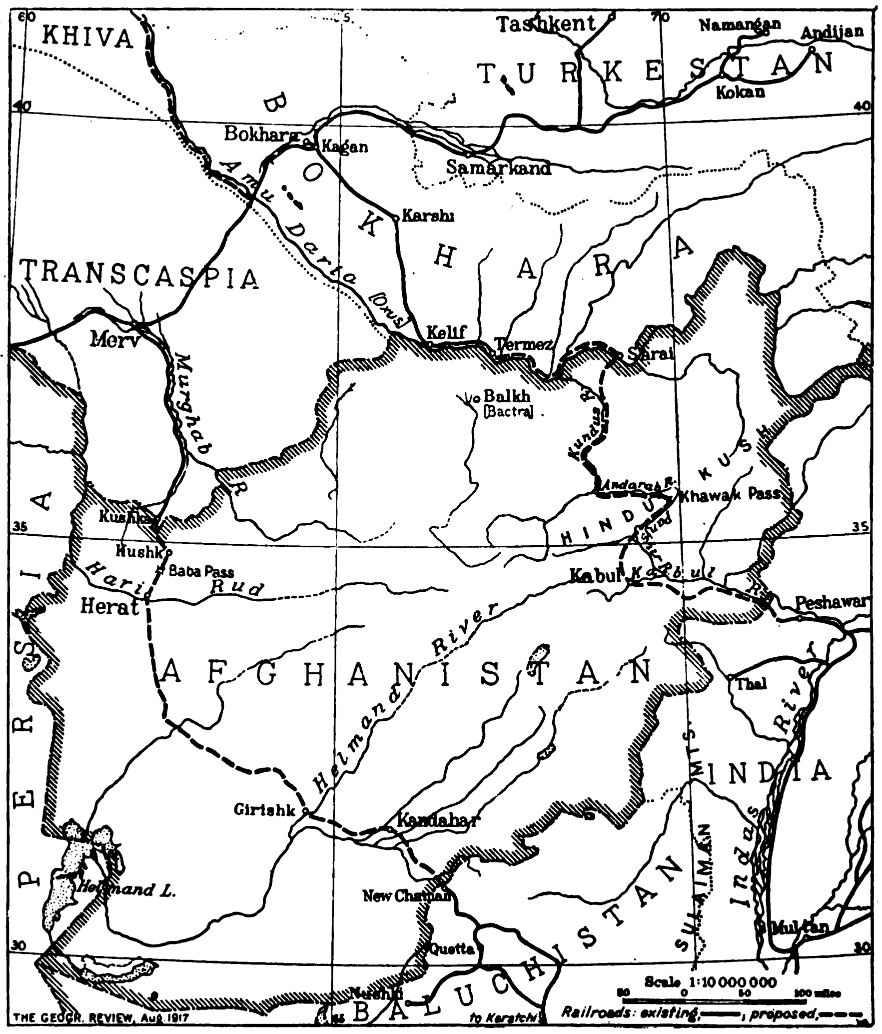
her authority once that authority has been established. Russia's methods of warfare, her showy Asiatic magnificence, her iron hand under the velvet glove, impress the Asiatic. Her methods of wholesale slaughter which broke the spirit of Central Asia is claimed by Russians to be cheaper, quicker and more effective, and in the end, the most humane."

By this system, the Russian military juggernaut crushed out the life of the little peoples of Asia, as the first step toward the conquest of India. Only the most determined moves on the part of England halted the Bear at the Afghan frontier and prevented Persia from being absorbed, and India flanked on its most vulnerable side.

Checked temporarily in this direction, the Russians swung round into the Pamirs. The Hindu Kush, the natural boundary of India, was proclaimed as the frontiers of Russia in Central Asia. Chinese Turkestan was brought under the influence of the Czar; the Ili district remains Chinese in name only. Russian agents invaded Tibet. Military exploring parties disguised as scientific expeditions swarmed over the roof of the world mapping out the passes in the Himalayan wall through which the hordes of Russia could sweep down into the garden of India. Britain was compelled to annex Sikkim, and, when the emissaries of the Czar won over the Dalai Lama, was again forced to act. The Younghusband expedition was the result, and Tibet forever lost to China.

Russia's direct advance on India was halted, and once more she started to clear the trail for another flank movement. Japan was deprived of the fruits of her victory over the Chinese; the traditional enemies of England standing solidly together to further the designs of Russia.

The secret Li-Lobanof alliance entered into in 1895, following the Shimonoseki Treaty and the Imperial Rescript surrendering Japan's position in Liaotung, was the starting point of China's troubles. It was an open payment by China to Russia for compelling Japan to forego the fruits of her victory. It was China's revenge. She opened her doors to the armies of the Czar and paved the way for the subjugation of Japan. Not only did China consent to the leasing of *Kiaochao* to Russia as a naval base, but the undisputed possession of Port Arthur and Talienwan (Dalny) in the event that Russia became engaged in hostilities with any other power. There was only one interpretation to be placed on these moves. Japan was to be crushed; punished for daring to interfere with Russia's self-imposed monopoly of subjugating the peoples of the Asiatic mainland. Russia's breach-of-faith with her German partner in the matter of the Russo-Chinese Bank, determined the latter to forestall her in Kiaochao. China would have gladly handed over



From the Geographic Review

THE RUSSIAN ROAD TO INDIA

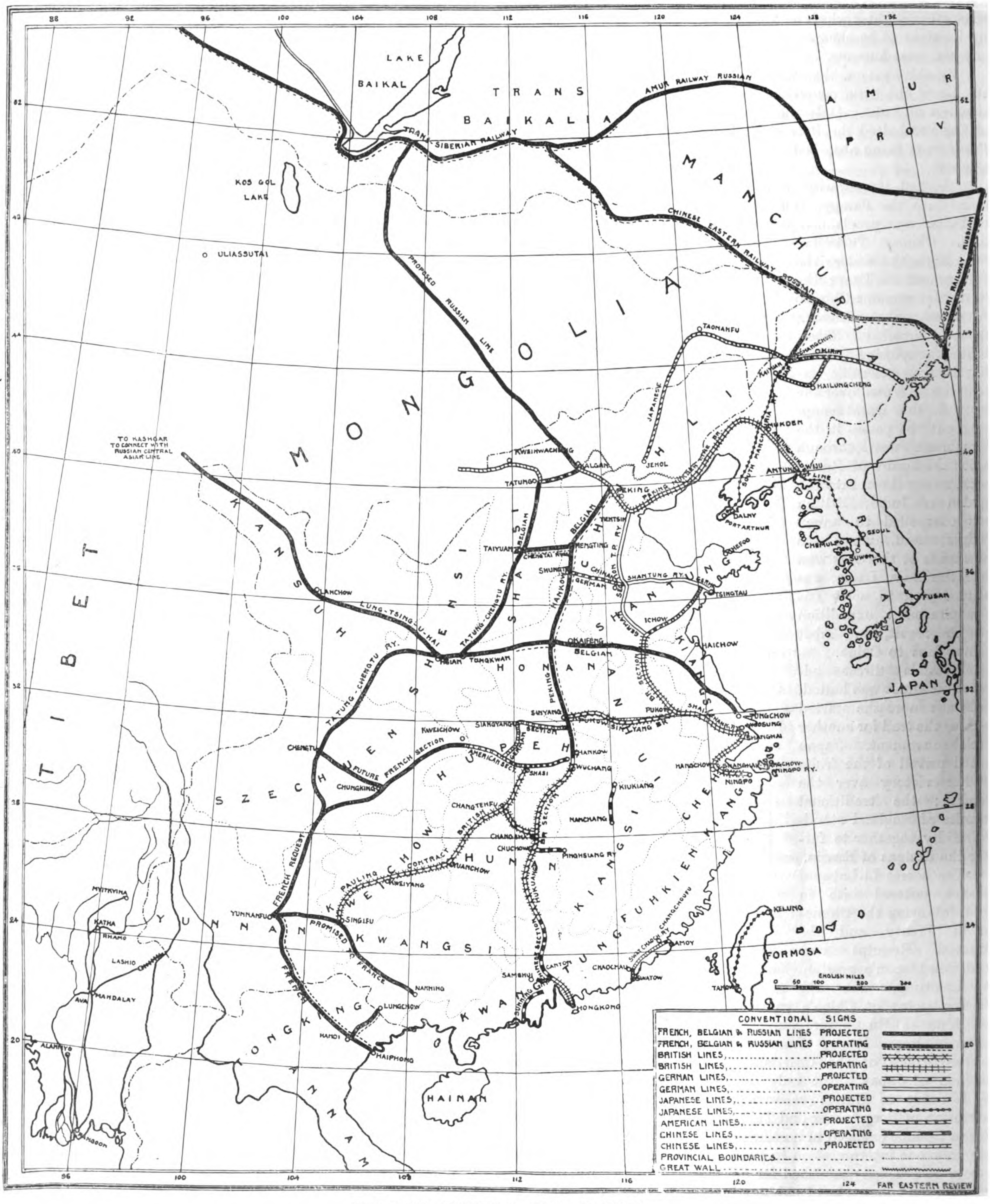
Outline Map of Central Asia showing in Greater Detail the Proposed Connections between the Russian and Indian Railway Systems through Afghanistan

this important harbor and potential naval base to her great and good friend, Russia, in order to facilitate the latter's attack upon Japan and gratify her desire for revenge. Germany's prompt and dramatic move in stealing a march on her perfidious ally obtained for her the 99-year leasehold on this coveted strategical position. In our haste to condemn Germany and throw stones at Japan let us not forget this initial compact between China and Russia which compelled the other powers to move at once to protect themselves. It may be true China had a perfect right to cede her possessions to Russia, but when the exercise of this prerogative becomes a direct menace to the political existence of her neighbors, it may be indulged in only at the peril of immediate reprisals. Mexico, in the full enjoyment of her sovereign powers, may be justified in ceding a naval station to a foreign nation in some of the Lower Californian bays. The Central or South American States may, with equal right, convey similar privileges that might become a strategic menace to the American defense of the Panama Canal, but no explanation these governments could give, would deter the United States from placing a peremptory veto on the transfer and of exacting compensatory damages and guarantees for their future good-behavior.

For over a century, the full weight of Britain's diplomacy, and at times, her military and naval power, had been exerted in blocking Russia's designs to oust her from India and obtain an ice-free port on the coasts of Asia. Yet here was China, smarting under her humiliation at the hands of Japan, gleefully handing over her three choicest ports in North China to the dreaded and avowed enemy of England. Experience had taught England that when Russia moved in Asia, it behoved her to act quickly. Japan could do nothing. The coalition against her was too powerful. She could only sit by and watch the preparations being made for her funeral. Her only friend was England, whose vital interests were also placed in jeopardy by the folly of China. This fundamental truth must never be lost sight of in attempting to understand the subsequent moves of the powers in China. This is the beginning; the key to the puzzle.

Great Britain had declared that any power which conceded Russia's right to a port on the Persian Gulf, would be considered as an enemy. Britain would go to war immediately to protect this strategical approach to India from its weakest and most vulnerable side. Russia on the Persian Gulf, or in the Pacific, meant that the day must come when England would have to fight for the existence of her empire. When China opened her doors and brought Russia down to the warm-water ports of the Yellow Sea, she placed herself on the side of England's enemy. She became an active ally of Russia.

REACHING INDIA'S NORTH-EASTERN FRONTIER BY WAY OF CHINA

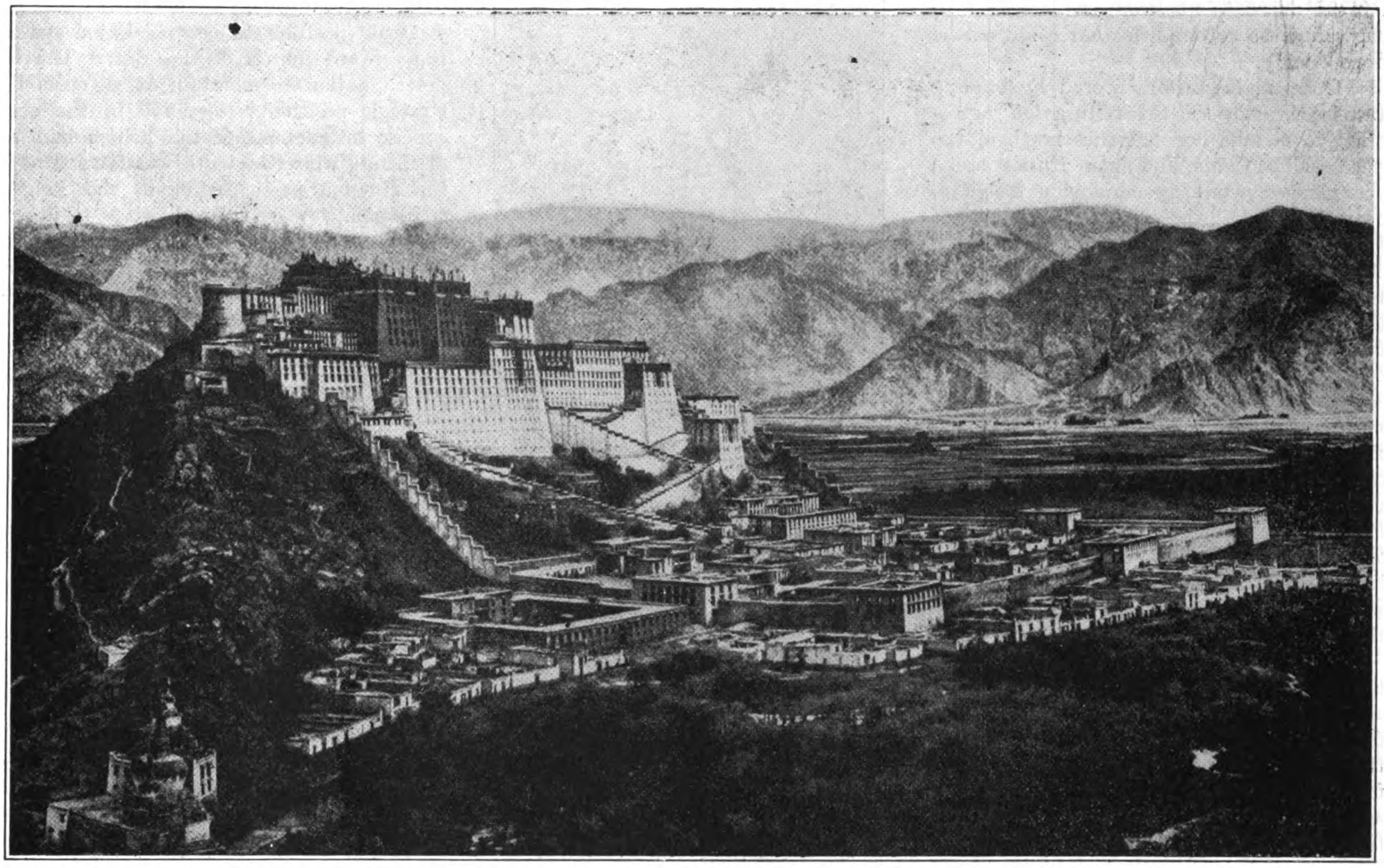


POLITICAL RAILWAY MAP OF CHINA

This map was printed by THE FAR EASTERN REVIEW, in 1914, to illustrate the political and strategical significance of the Russo-Belgo-Franco railway contracts, which divided China by a north and south and east and west trunk system, permitting Russia to join hands with her French Ally on the south and opening up a deep water port at Tungchow for the Lung-Tsung-U-Hai (Central Asian) line. This map also gives a clear idea of the meaning of the Japanese lines in Manchuria, which are shown to be purely strategic frontiers against the pressure of Russia

When Russia moved, her French ally moved with her. The treaties amply prove that there existed a decided tendency to create and preserve preferred spheres in other parts of China before Germany applied the "Mailed Fist" at Kiaochao. Britain was entrenched at Hongkong. The French non-alienation agreement covering Hainan of March, 1897, was only the corollary of her ally's moves in the North. China was caught in the Franco-Russian trap, which caused Great Britain to demand the non-alienation declaration creating the Yangtze Valley sphere in February, 1898. It has been urged that the declared intention of Germany to demand Kiaochao, precipitated the British move in the Yangtze. If we can visualize the great struggle being waged at that time with India for the prize, and the elimination of England from Asia, the picture will disclose that when China gave her two best northern harbors to Russia, and France obtained recognition of her position in Hainan, Hongkong was placed between England's two most powerful enemies. "It is from jealousy of India and to impair the position which India gives to Great Britain in the Far East that France has again embarked upon an Asiatic career, and is advancing from the south-east with steps that faithfully correspond with Russia upon the north-west," wrote Lord Curzon in 1900. The precedent for the creation of spheres of influence was therefore created by France several months before the German missionaries were murdered in Shantung. When Germany obtained Kiaochao, France followed by exacting from China a further non-alienation agreement covering South China. Eight days later (April 18, 1898), Great Britain supported Germany's rights in Shantung by renouncing all intention of connecting Weihaiwei by railway with the Shantung hinterland, thus conceding to Germany a monopoly in the exploitation of that province. The week following, after all the other great powers had delimited their strategical positions, Japan, supported by Great Britain, obtained the non-alienation declaration embracing the province of Fukien, which not only protected her position in the Island of Formosa, but interposed an additional buffer between Russia on the north and French on the south. On June 9, Great Britain demanded and obtained the lease to the Kowloon Territory. The inability of China to defend her neutrality, compelled Great Britain to exact this lease as the only protection to Hongkong against a land bombardment in the event of hostilities. On July 1, she obtained the lease to Weihaiwei, where her fleet had been anchored since Russia swaggered into Port Arthur across the strait. Keep in mind the fundamental facts about Russia and the subsequent events are entirely comprehensible.

Russia was then teaching the world a new lesson. "By her forethought, energy and fertility of resource, she led the way and taught the powers how to conquer by railways. She alone recognized how much more valuable are communications than mere army corps ; how necessary in a nation's affairs is a fixed plan. Russian railways, made by Russians for Russia, ran straight across Asia from Moscow to the China Sea, from Batoum through Trans-Caspia to the western gates of the Chinese empire, and to the Herat province—the key of Afghanistan and the outwork of India. Both in the Far East and Central Asia, the Russian railways are to be gradually carried further south—through China to the Yangtze Valley, and through Persia to the Indian Ocean. At the same time, she is pushing her feeder lines southward into Europe's sphere of influence to gain a commanding influence in Turkey and Persia. The old idea of a direct invasion of India has been for the time being at least, abandoned, and in its stead, the plan has been adopted of commanding Central Asia, Persia and Afghanistan by means of railways and of **reaching India's north-eastern frontier by way**



LHASSA—THE MECCA OF THE BUDDHIST FAITH AND RESIDENCE OF THE DALAI LAMA

Whose intrigues with Russia compelled Great Britain to send an army under Colonel Younghusband to restore the balance of power. As a result, Tibet became a Buffer State, nominally independent under China's suzereignty, but hermetically closed to foreign exploitation

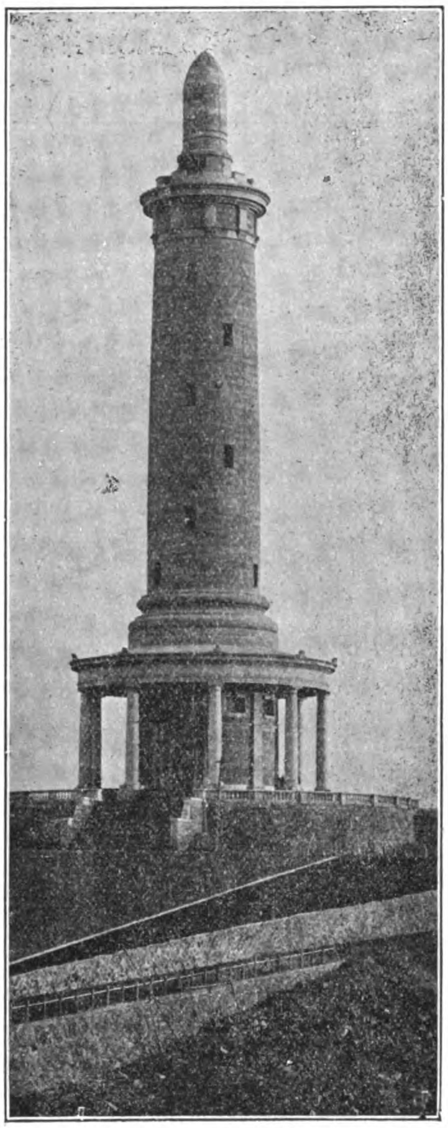
of China. Wherever Russia can develop cultivation she will provide storehouses for the time when she wishes to introduce an invading army. When she can develop her railway systems, she will have the means of transport ready to hand. She aims at re-creating the fertility of the Central Asian steppes and thus forming fresh bases for further advances." Thus wrote Archibald Colquhoun in 1900.

Russia did nothing by halves; she worked on a big scale with fixed objects in view. "Run back over Russia's far-sighted and patient policy, which has always looked ahead and considered the needs of the Russian people a century beyond the present moment, and perhaps an explanation will spring from these combined considerations." Halted on all sides by the swift and certain strokes of British diplomacy backed by a naval supremacy that no one power or coalition of powers dared to question, she resorted to subterfuge to accomplish what could not be done openly.

Once again Britain scored by binding Russia through the Scott-Muravieff agreement to confine her activities north of the great wall of China, and again Russia broke her pledged word by employing Belgium, operating with the financial support of France, to extend her tentacles toward south China, and the coveted north-east borders of India. "It has been abundantly proven that Russia's pledges were given merely as a matter of diplomatic expediency to be broken whenever convenient." Her policy was to take advantage of the slightest opportunity offered. Mery was annexed when England was busy in the Soudan; the Central Asian railway was pushed up to the borders of Afghanistan. Tibet nearly fell into her maw during the Boer war. Manchuria was occupied during the Boxer troubles, and Mongolia declared independent when China was in the throes of a revolution. Russia never overlooked a trick.

When Russia moved in Asia, France, her ally, moved with her. France was helpless, bound to Russia's chariot by chains of gold. "Between the French republic and the Russian autocracy exist the most perfect and smoothly working governmental and diplomatic understanding of modern times. It is a singular illustration of the influence of hatred and interest in making a combination between two peoples unlike in temperament, ideas and methods. Their alliance was born of their common fear and hatred of Germany and England—of the numerous conflicts of German and English interests with Russian and French interests. And so, in their foreign policy, and particularly in their Oriental diplomacy, they might almost be said to work as one government. So far as the rest of the world is concerned, French diplomatic agents in Asia operate in understanding with Russia; and the reverse is also true." These are the words of Senator Albert J. Beveridge in his book on the "Russian Advance" written in 1903. Every mile of Russian railways in Asia was built with French money; when Belgium entered the Chinese field on behalf of Russia, French capital subscribed to eighty per cent. of the loan issues.

So, when England, fighting for the life of her empire, called checkmate time and again to Russia's moves on the diplomatic chess-board, the latter turned to little Belgium to play her game secretly. Russia's program was to divide China in half by a north and south railway that would link her Manchurian and projected Mongolian systems with the lines of her French ally on the south, and so bring their armies nearer to the coveted north-eastern frontiers of India. A Belgium syndicate backed by French capital and in partnership with the Russo-Chinese Bank, obtained the great Peking-Hankow railway concession after the Chinese had solemnly promised Great Britain that Russia would not be admitted to participation in the deal. At the same time the Russian combination acquired the rights to the Chengtai and Pienlo railways, as the first links in other grandoise schemes for the subjugation of China. Again China willfully played the Russian game and brought her another lap nearer her goal, and, once more, Britain countered and compelled China, under threat of an ultimatum, to concede compensatory damages, that would enable her to hold her strategic position in central China against the onward march of the Bear. The set determination to maintain at all costs her strategic position is disclosed in the curt, concise instructions to the British minister at Peking when the truth was learned as to the Russian participation in the Belgian concession. "You are authorized to inform the *Tsungli yamên*, that unless they agree at once (to the demands for compensatory railway rights) we shall regard their breach-of-faith concerning the Peking-Hankow Railway as an act of deliberate hostility against this country, and shall act accordingly. After consultation with the admiral, you may give them the number of days or hours you may think proper within which to send their reply." There was no trade policy in such a note. It breathes the spirit of a government grimly determined to resort to instant hostilities against the deceitful action of China in opening her doors to the enemies of England in order to facilitate their advance upon India. This is the reason underlying Britain's demand for recognition of her predominance in the Yangtze Valley. It is her one bulwark against the slow, cunning, moves of Russia to oust her from India by an attack through the territories of China. As China cannot defend herself or preserve her neutrality and guarantee the British empire from attack, her territory becomes the strategic frontiers of India; England must dig herself in, in the Yangtze regions.



The Price that was Paid

The Monument to Japan's Dead at Port Arthur. At Liaoyang, Mukden and other Places in Manchuria, imposing Memorials arise over Battle Fields Drenched with the Blood of Nippon, the Price of a Useless Railway, which has now become a vital necessity to the Economic and Strategic Security of the Empire

Once more England called check by placing the Yangtze Valley between India and the Colossus of the North. Then the Americans broke into the field and thwarted her well laid plans. The American-China Development Company, holding the concession for the southern half of the great north and south trunk railway from Hankow to Canton, permitted the Belgians to obtain control of its stock in the open market, and were about to step aside and hand over the administrative control. Russia almost attained her object. Her Belgian agent controlled the line from Peking to Hankow, and the Americans made them a present of the southern half to Canton. Is it any wonder that the campaign was initiated to oust the Americans, and the British press clamored for the surrender of the concession? Once again, the British position was menaced, and again, by heroic diplomatic teamwork, they obtained a hard and fast option on the rights to

this line; a right they have not sacrificed in its internationalization under the Hukwang Loan.

While her ally and agent were carrying her plans into execution in prohibited spheres, Russia was playing an energetic game of her own in the north. The Boxer uprising provided her with the opportunity to flood Manchuria with troops and entrench herself. Harbin rose like a boom town on the broad expanse of the Manchurian prairies and became the Far Eastern capital of the Czar, the strongest military encampment of Eastern Asia; Port Arthur was hurriedly transformed into an impregnable naval base and the city of Dalny created over night like an Arabian Night's Dream? When the allied powers were negotiating the Boxer terms, Russia, working independently, was forcing China to sign a separate secret treaty which would have clinched her domination over Manchuria and prohibited China from constructing railways in any of her provinces bordering on the domains of Russia? Again England had to act quickly to save the situation. This time (October 6, 1900) she entered into an alliance or understanding, not with the United States, the champion of the "open door" policy, but with Germany, in which the two countries were to stand together to oppose Russia's covert attempt to take advantage of the situation for selfish ends. Again, China was about to play the Russian game and sign the secret treaty. Only under pressure from the other powers, did she finally make known the extent of Russia's demands. Backed by their support, she refused to sign and Russia withdrew.

Temple of the Third Living Buddha at Urga

Harassed and beset on all sides in Asia through the activities of the coalition seeking to undermine her position in India, and handicapped through the incompetency and inability of China to protect her territories against the menace from the North, Great Britain threw her fortunes in with Japan, and in 1902 signed an alliance with the rising Oriental power. This combination of democracy with an Oriental autocracy has been severely criticised and condemned, but an impartial study of the diplomatic game in Asia will fully justify its necessity. The gold of republican France was supplying the motive power for the autocratic Russian machine in Asia, and, secretly encouraged by Germany, the combination on one side, was bent on absorbing Persia in order to attack India, and on the other, snuffing out the independence of Korea as the first step in the throttling of Japan. Britain was isolated. The great white powers of Europe were combined against her. The instinct of self-preservation threw Britain and Japan together against a common enemy. It may have been an unholy alliance, but from the viewpoint of practical diplomacy it was absolutely justified, and, harp as we may, it stands as the one guarantee of a permanent peace in the Far East, the one formidable check to the never changing policy of Russia, the one safeguard for the defense of the British empire and the future existence of Japan. Once again, the "open door" doctrine which could not be relied upon to check Russia, had to give way to a more practical instrument of defense. The alliance worked, it accomplished its purpose. Raising her paw from the vantage point presented by China to snuff out the life of Korea, the Russian Bear received the first set-back in her long and bloody career of annexation of little nations. The paw came down upon the upraised bayonets of Nippon. Discomfited, sore, surly and revengeful, Russia withdrew temporarily from South Manchuria to her second line of defense north of the Sungari, still holding her ground within the territory of neutral China.

Japan was compelled to fight for her life. Only by a superhuman effort, a terrible sacrifice of blood and treasure, was her independence assured and the menace hurled back to the frozen fastnesses of the north. Who was to blame? Japan did not invite the war. She fought China ten years previous, and imposed terms deemed essential for her future protection against aggression, by insisting on the cession of the Liaotung peninsula. Japan followed the same law in imposing terms upon China that has since been followed by the great powers in their peace negotiations with Germany. This insurance against attack was denied to her by a coalition headed by Russia intent upon her subjugation. China willingly allied herself with and handed over to Russia what had been denied to Japan, not only as a grateful present for services rendered, but to be revenged upon her late antagonist. Russia lost no time in pushing her advantage. Manchuria was flooded with troops. Harbin, the administrative centre of the railway system, became the Far Eastern military capital of the Czar. From this vantage point, within the confines of China, and from the strongholds of Port Arthur and Dalny, Russia concentrated her energies toward the absorption of Korea and the annihilation of Japan.

Before the Chino-Japanese war in 1895 it may be said that Russia had no army in the East. Not until work began on the Chinese Eastern Railway did her troops begin to pour into Manchuria. The Boxer outbreak in 1900 provided an opportunity and at least 60,000 were marched into the province. In another year this was increased to over 150,000 and during the next three years this number was doubled. China was fully aware that her territory was to become the scene of a terrible war. Russia was manœuvring to extend her influence over Korea. China had gone to war with Japan in 1895 over Korea. She made no move to oppose Russia operating from within her territory. Her weakness, venality, duplicity and playing one power off against the other to save herself, bore its fruit.

And when the terrible sacrifice was completed; when the two armies stood face to face in the bleak desolate regions of the Sungari, far from their bases of supplies; broken and unable to carry on, the line was then delimited which marked their future strategic positions within the neutral territory of China. As long as Russia maintained her position in Northern Manchuria and held Harbin as a base, Japan dared not withdraw. To have retreated and surrendered her strategic footing gained at such a terrible cost, would have again handed over the fruits of victory to Russia. China would have once more opened the flood gates for the armies of the Czar to return to Mukden, Port Arthur and the banks of the Yalu.

Russia held fast to her strategic position in Manchuria and initiated those tremendous preparations for a war of revenge which kept the Far East in a state of inquietude since 1905. Hardly had the ink dried on the Treaty of Portsmouth, when she commenced feverish activities to retrieve her lost prestige and position in Asia. Until Japan was humbled, Russia could no longer safely lord it over the tribes and peoples of Asia. The peace treaty stipulated that the Chinese Eastern Railway, traversing the neutral zone of China, could not be employed for strategic purposes. Vladivostok, the Primordsk, and the Ussuri regions, were thus cut off from direct military contact with the rest of Siberia and Russia. Her eastern strongholds were isolated.

The war had been lost to the armies of the Czar because they tried to fight it at the end of four thousand miles of single-track railway, with their base of supplies in European Russia, and the line of communication broken during the long winter by the frozen expanse of Lake Baikal. Russia set to work to retrieve her mistakes. Huge appropriations were at once made for the construction of the Amur railway that would connect Vladivostok with the rest of the empire through Russian territory. This circumvented the clause in the treaty closing the Chinese Eastern railway for strategic purposes. The Trans-Siberian line was double-tracked. The Circum-Baikal link was completed. Vladivostok was strengthened and made impregnable. The Ussuri region was colonized from southern Russia and the country criss-crossed with military roads. Trans-Baikalia was opened to settlement. Industries were created, agriculture encouraged and everything done to make this region a base of supplies for the forthcoming struggle. Russia was faithfully carrying out the policy so strikingly predicted by Colquhoun several years previous. There was no mistaking the purpose of Russia.

THE HUTUKTU

The Living Bhudda of Mongolia

Who, taking advantage of the Chinese Revolution in 1912, sold himself to Russia. Mongolia was declared independent, and the way was opened for the Russian armies to advance upon Peking and flank Japan's position on its vulnerable side

His capital is again in the hands of a Russian Army

Japan stood amazed at these preparations for revenge. She was almost bankrupted by her struggle, yet compelled at all hazards to keep pace with the activities of Russia. Her armies were increased time and again, she hypothecated her last resources to strengthen her position. This is the sole reason for her militarism; obeying the same law of self-preservation that compels Britain to maintain her naval supremacy and France her military organization. Japan may be a military nation, she may have faithfully copied and admired the German system, but this does not warrant the accusation that she is on conquest bent. If Japan goes to sleep and listens to the siren song of the pacifists her national existence would not be worth a moment's consideration.

Because of China's inability to defend her own or her neighbor's territory, and the venality of her statesmen who allied their country with and admitted Russia into Manchuria, Japan was compelled to fight one terrible war for independence. To preserve this dearly bought security, she was again forced through the inexorable exigencies of the military situation in Manchuria to violate her pledged word and annex Korea and maintain her strategic foothold within China's territory. Korea borders on the Maritime provinces of Russia, offering a free and unobstructed passage to the armies of the Czar when again ready to move against Japan. The snuffing out of Korea's independence which constitutes one of the tragedies of recent years, was inevitable. If Japan had not stepped in and annexed the peninsula, nothing would have prevented Russia from seizing the first opportunity to occupy the territory as a base for her operations against Japan. If Japan had meekly given up her position in Manchuria and respected the independence of Korea, she would simply have invited her own subjection; she would have committed *hari-kari*.

The rights of smaller and weaker nations fade away and disappear when their governments through incompetency, corruption and general ineptitude endanger the life of stronger, better organized and developed states . . . The national life of Mexico would be snuffed out in a twinkling, if her present disorganized condition was ever employed by German or any other power as the bridge over which our own independence was threatened or attacked. One such lesson is enough for any virile nation. As long as Russia holds Northern Manchuria and the Primordsk, Japan must, in self-defense, dig herself in in the south. It is the punishment that China is now receiving for her double dealing, and the price Korea pays for her continued disorganization and intrigues which invited her absorption by Russia.

Let us return to the chess-board. Russia very naturally attributed her defeat to the strong support tendered to Japan by Great Britain. She bided her time and awaited the opportunity that was sure to come. Then the Americans re-entered the labyrinth of Far Eastern politics by proposing the neutralization of the Manchurian railways, ignoring the tremendous struggle for empire that was going silently on in the depths of Asia. The story of how this was rejected, is fresh in the memory of all. Finding someone she could play off against the others, China utilized the Americans to break the hold of Russia and Japan in Manchuria by concluding to the American group an agreement for financing the Chinchow-Aigun railway. It was a foregone conclusion that it would be blocked.

Who defeated this scheme, which, on its face, was a legitimate enterprise, well within the treaty rights of the United States to undertake and the sovereign power of China to initiate? It was not Japan. Backed by the full weight of French diplomacy, Russia emphatically refused to permit its construction, applying the principle that any Chinese railway that touched or paralleled her boundaries became a strategic menace to her military position. Russia went back to the principle that she tried to force upon China at the time of the Boxer troubles. The Chinchow-Aigun railway opened up a new line of communication from the south aimed at the heart of her Amur region, a highly important military ally that would fall into the hands of Japan at the first sign of renewed hostilities. Under the terms of the Portsmouth Treaty,

Russia was prohibited from employing the Chinese Eastern line for military purposes. The new Amur railway then under construction, constituted her only line of communication within her own territory connecting Vladivostok and the maritime regions with the rest of the empire. With the Chinese Eastern line closed to military movements, the proposed new Chinchow-Aigun line therefore opened a clear and unobstructed passage for the armies of Nippon to strike at the most vital point in her new line of defense. In the event of Japan reaching the banks of the Amur, the whole Russian empire east of Baikal would be at her mercy. Naturally, Russia, who thinks only in terms of military strategy, stubbornly refused to budge from her position. Japan was willing enough for the line to be constructed, provided she was permitted to participate, but this was rejected by China and America. It was Russia, and Russia alone, who blocked the concession. She called checkmate to England, and in so doing, established the principle that China cannot construct railways within her own boundaries which might become a strategic menace to her neighbors. The other great powers did not oppose the imposition of the new doctrine, clearly foreseeing that the time would arrive when, because of the continued weakness of China, they would be compelled to invoke the same principle in defense of their own interests.

Russia then sat back and awaited the next move. This came with the Chinese revolution, providing the ever watchful Bear with another opportunity to shove his paw deep into the Chinese honey-pot. Mongolia was declared independent and brought under Russian influence. The continued disorganization of the Chinese invited this rape of their territory. The strategic position of Russia was strengthened. The Cossack was brought to the Great Wall and Japan's position in south Manchuria outflanked. The weakness of China was again paving the way to the undoing of Japan. The amputation of Mongolia was simply another strategic move on the great chess-board of Asia which permitted Russia to set at naught the watchful preparations of Japan and facilitate a flank attack on her position from the west and south-west. Russia moved rapidly. No sooner had Mongolia been declared independent, and the Hutuktu and his Lama ministers bound hand and foot through the terms of a treaty recognizing Russia's protectorate, than negotiations were opened in Paris for the immediate financing of railway lines within the new state, under a Russian guarantee as to principal and interest on the loans. This told the interested powers that Russia was again starting her plan of conquest or annexation by railways, leading up to the complete absorption of Mongolia. This Russian move forced Japan to extend her activities into Inner Mongolia. Here we have the sole reason for Japanese military operations in these regions ; the compelling motive influencing Japan to embrace this region within her sphere of interest. If Japan refrains from pushing her influence deep into Inner Mongolia, Russia will employ the territory, when the time is ripe, to strike at Japan in Manchuria from her most vulnerable side. Once Russia gained the whip-hand in Mongolia, she applied her pet policy of closing the country to railway construction and Chinese colonization. Mongolia became a closed sphere, nominally independent under the suzerainty of China ; in reality, another hidden empire to screen the forward moves of Russia toward her goals in India and Japan a land that the yellow man might not live in. The rest of the world slept. The Czar was advocating world peace, his ministers were preparing for war. Russian policy never changes. She again scored.

Let us return to the situation in Tibet. The Younghusband expedition was sent to Lhasa in 1904, ostensibly because of a failure on the part of China to comply with the trade regulations agreed upon in 1893, in reality, to forestall Russia. As a result of the occupation of the sacred capital of Bhuddism, the Lama Hierarchy was forced to sign a treaty providing for the non-alienation of Tibetan territory to any foreign power ; the prohibition of foreign intervention in its affairs ; the exclusion of all political agents or representatives ; the interdiction of the revenues of the country being mortgaged, and finally, closing the door to railway, mining and other development concessions. To this agreement, China was forced to assent in 1906. Russia also reluctantly accepted the accomplished fact and entered into an agreement with Great Britain to recognize the above conditions. Tibet was converted into a water-tight compartment, a buffer state, created to protect India against the forward march of the Bear. Britain scored. During the revolution of 1912, the Chinese were driven out of Tibet, and on January 11, 1913, her independence was declared by concluding a treaty with the Hutuktu, the ruler of Mongolia, who had passed under the thumb of Russia. In this, Russia scored, compelling Great Britain to call upon China for the negotiation of a new agreement concerning Tibet.

The struggle for empire, for control of India, assumed a new phase with the return of Russia during the Chinese revolution. Checked in her frontal march upon India through Tibet, Russia again retreated into the background and employed her Belgain agent and French financial partner to open up an oblique road through China. The Belgians appeared on the scene during the revolution. One of their first transactions was to advance a loan secured on the Kalgan railway, a line that Russia had kept her eyes on for many years, the only pass through the mountain wall between China proper and Mongolia. Again Russia scored and circumvented the Scott-Muravieff understanding, and Britain countered by having the Belgian loan absorbed into the general Reconstruction Loan advanced by the consortium. When Russia was admitted into consortium the Belgian syndicate appeared as the official Russian group. One of these Belgian syndicates then obtained the concession for the great trunk-line from the sea at Haichow to Lanchow and beyond in the Kansu Panhandle ; the centuries-old highway into Central Asia. This was the first half of the great trans-Asian line which would ultimately connect with the Russian system in Central Asia. The original deep-water terminus at Haichow was then shifted to Tungchow, located on the Yangtze River near its mouth. The Bear was at last in the Yangtze, squatting on the north bank and twiddling his claws at the discomfited Lion across the river at Woosung. Russia had not only sneaked into the Yangtze Valley, but had set at naught all the carefully laid plans of Britain in Tibet, by flanking this territory all along its northern borders. The work of a century of British diplomacy and foresight was being wantonly destroyed by a group of Chinese officials selling their country piecemeal to the Czar. Britain woke up with a bang.

Hardly had the ink dried on this astounding contract, when the Chinese officials capped this diplomatic blunder by handing over to another Belgian syndicate, leagued with Russia, the concession for a through north and south trunk line connecting Tatung on the Mongolian border with the city of Chengtu, the provincial capital of Szechuan, commanding the natural passes from China into Tibet from the east. At Chengtu the Russo-Belgic combination at last linked up with the lines of their French partner from the south. The dream of empire was being realized. Mongolia had been cut away from China, and hurried steps were being taken to solidify the Russian position by means of new railways that would bring the armies of the Czar down to the exposed western flank of Japan in south Manchuria. China was cut in half from east to west by a line that would run from Central Asia to the sea at the mouth of the Yangtze, paralleling the northern borders of Tibet and creating a southern military boundary for Mongolia. From north to south China was split in twain by the Tatung-Chengtu-Yunnan-Yamchow combination commanding the principal roads and passes into Tibet from the east and north-east. This line would bisect the east and west line and the two merge into one in the fertile Wei River Valley, the cradle of China's civilization. Sianfu, the ancient capital of China, would become the central base of future Russian operations. The implements for throttling British rule in India, through control of Tibet had been forged. At every step China faithfully adhered to her alliance with Russia surrendering the use of her territory to menace the position of Britain in India and exposing Japan to the mercy of the Czar. Is it any wonder that Japan and Great Britain came closer together for the protection of their common interests ?

Great Britain had no choice left to her. She closed the Yangtae. She announced her intention so that all the world might heed the warning. There was no mistaking the words of Sir Edward Grey in his memorable speech before the House of Commons on July 10, 1914. The United States government had refused to go beyond words in its interpretation of the "open door." With Britain it was a matter of life and death, and no matter how willing she was to open the Yangtze Valley to all, the action of the Chinese government in inviting the Russians south of the great wall and endangering the existence of the British empire, compelled her to discard ideals before the stern necessity of self-preservation.

China had placed herself in the jaws of a giant Russian nutcracker ; she sold her birthright in Manchuria, Mongolia and Hsinkiang to achieve her revenge upon Japan. She had become a menace to herself, a formidable danger to the existence of others. When Britain announced that the Yangtze Valley was closed, France understood that the play was over and hurriedly slammed the door in Kwangsi and Japan later presented the Twenty-One Demands in order to consolidate her position in Manchuria and Inner Mongolia.

Not noly were India and Tibet menaced by the Belgo-Franco-Russo strategic railway system, but by Russia's occupation of Mongolia, Japan's position on the mainland became absolutely untenable. Reference to the map will clearly show that the main Belgo-Franco-Russo lines all debouched upon Shantung, enclosing that province and Peking in a Russian trap, handing over to the armies of the Czar all the territory north of the Yangtze Valley.

With Russia entrenched in Mongolia and northern Manchuria and heir to the German rights, Japan would have been surrounded and compelled to withdraw from the mainland and take her last stand, make the last fight for her existence, in Korea or the Japan Sea. It is rather tiresome to read Chinese and foreign surmises as to the reasons which prompted Japan to enter the war and attack the German stronghold at Tsingtao. She had no choice in the matter. An allied victory with Japan on the outside meant the domination of Shantung and north China by Russia. Japan did the proper thing. Instead of heaping abuse upon the heads of the Japanese military leaders and accusing them of entering the war for territorial expansion in pursuit of a set policy of imperialism we should acknowledge the superior military genius of men who knew best how to safeguard the existence of the empire entrusted to their keeping. Militarists have no ideals. Their duty is to defend the nation and lay plans far in advance for any possible contingency.

The players were keenly intent upon their game during the war. Great Britain has taken advantage of exceptional opportunities to drive her frontiers and influence deep into Central Asia against the day when the Bear will once more start upon his devastating march. Democracy may prevail in Russia ; again, it may not. Britain is taking no chances in a game that has been going on for over a century. There is no assurance that Russia will not take it up where she left off. The weak spots in the defense of India have been strengthened. Persia is another Egypt under the protection of Great Britain. She pays the penalty for refusing to place her house in order and provide protection to the British empire.

TEXT OF THE (LI-LOBANOV RUSSO-CHINESE ALLIANCE.—While attending the coronation ceremonies of Emperor Nicholas at Moscow, in May, 1896, Li Hung-chang concluded with the Russian minister for foreign affairs (Count Lobanov-Rostovski) a secret treaty of alliance. The following is an English translation of the French text :—

"Article I.—Every aggression directed by Japan, whether against Russian territory in Eastern Asia, or against the territory of China or that of Korea, shall be regarded as necessarily bringing about the immediate application of the present treaty.

"In this case the two high contracting parties engage to support each other reciprocally by all the land and sea forces of which they can dispose at that moment, and to assist each other as much as possible for the victualling of their respective forces.

"Article II.—As soon as the two high contracting parties shall be engaged in common action no treaty of peace with the adverse party can be concluded by one of them without the assent of the other.

"Article III.—During the military operations all the ports of China shall, in case of necessity, be open to Russian warships, which shall find there on the part of the Chinese authorities all the assistance of which they may stand in need.

"Article IV.—In order to facilitate the access of the Russian land troops to the menaced points, and to ensure their means of subsistence, the Chinese government consents to the construction of a railway line across the Chinese province of Amour (i.e., Heilungkiang) and of Guirin (Kirin) in the direction of Vladivostok. The junction of this railway with the Russian railway shall not serve as a pretext for any encroachment on Chinese territory nor for any infringement of the rights of sovereignty of his majesty the emperor of China. The construction and exploitation of this railway shall be accorded to the Russo-Chinese Bank, and the clauses of the contract which shall be concluded for this purpose shall be duly discussed between the Chinese minister in St. Petersburg and the Russo-Chinese Bank.

"Article V.—It is understood that in time of war, as indicated in Article I, Russia shall have the free use of the railway mentioned in Article IV, for the transport and provisioning of her troops. In time of peace Russia shall have the same right for the transit of her troops and stores with stoppages, which shall not be justified by any other motive than the needs of the transport service.

"Article VI.—The present treaty shall come into force on the day when the contract stipulated in Article IV, shall have been confirmed by his majesty the emperor of China. It shall have from then force and value for a period of fifteen years. Six months before the expiration of this term the two high contracting parties shall deliberate concerning the prolongation of this treaty."—From *America's Aims and Asia's Aspirations*, pp. 456-7.

We can now understand Japan's determination to oust Germany from Shantung. If Japan had remained neutral or semi-quiescent, Russia sooner or later, would have insisted upon the right to lay siege to Tsingtao from the land side, sending her troops through Chinese territory for that purpose, or, in the event of an allied victory with Japan on the outside, Russia would have claimed the German rights in China which would have provided her strategic railways with a fine ready-made deep-water terminus at Tsingtao, instead of Tungchow on the Yangtze. Under such conditions, Great Britain would have been compelled to yield the point to save her position in that region. It meant another step forward for the Bear in Asia. The Central Asian Lung-Hai-Tatung-Chengtu system would have found its northern outlet to the sea over the rails of the Russo-Franco Chengtai line, and thence over the German Shunteh-Tsinan and Shantung railways to Tsingtao. The terminus of the Lung-Hai line would have been diverted to Tsingtao over the German Kaomi-Hsuchow project.

Immediately following the ratification of the Persian treaty, on August 18, 1919, came the announcement that Great Britain and China reached an agreement in regard to Tibet. The Chinese foreign office agreed to grant autonomy to Tibet while retaining suzerainty over that country ; and the proposal met with the approval of the British government. China will be relieved of the burdensome and hitherto impossible task of keeping Tibet in order ; and the British desire for the maintenance of Tibet as an autonomous buffer state is realized. In other words, Great Britain finally counter moved against Russia in Mongolia, applying the identical tactics. Tibet is declared an autonomous, independent state under the suzerainty of China, and, on the side, Britain has separate understandings with Tibet which places the newly created state under her protection. Just like Mongolia, the same as Persia.

In the east, Japan was desperately trying to hold down the situation and extend her foothold in northern Manchuria, Mongolia and Siberia. She has taken advantage of every opportunity to fortify herself, and extend her front line trenches as near as possible to the coming menace. What could not be done with shovels and trench tools, was accomplished with gold. Russia got a taste of her own medicine ; her methods were turned against her ; Japan purchased every right the Chinese mandarins would part with.

Japan did what any other nation would do under the same circumstances. The Northern and Southern leaders were on their knees begging Japan for ready cash to fight each other with. The Northern, or militarist government, was recognized by the powers; it had the power to contract loans and hypothecate resources. Japan went the limit in obtaining control over rights deemed essential to her future security against the "come-back" of Russia. She did her work well. She confirmed her strategic position in Manchuria and Inner Mongolia by a definite railway agreement and paid down $10,000,000 bargain money to clinch the deal. She loaned funds for the Peking-Kalgan-Suiyuan railway and obtained an option on the future financing of this strategic line of the Inner Mongolia defenses. She outwitted Russia, planting herself squarely across the path of the Bear. Russia played a magnificent stroke when she separated Mongolia from China and outflanked Japan's position in south Manchuria. Japan has quietly, impatiently at times, awaited her opportunity and repaired as far as possible the damage caused by China's weakness.

The struggle for empire, for the right to live and exist is still going on within the hidden confines of Central Asia. There is no power or combination of powers that can dislodge Japan from her position. She will fight to finish and go down to oblivion before she will again leave the door open and the road clear for the Bear to walk through.

THE TRUCE OF THE BEAR

By RUDYARD KIPLING—1898

(Printed by Request)

Yearly, with tent and rifle, our careless white men go
By the pass called Muttianee, to shoot in the vale below.
Yearly by Muttianee he follows our white men in—
Matun, the old blind beggar, bandaged from brow to chin.

Eyeless, noseless, and lipless—toothless, broken of speech.
Seeking a dole at the doorway he mumbles his tale to each ;
Over and over the story, ending as he began ;
"Make ye no truce with Adam-zad, the Bear that walks like a man !

"There was a flint in my musket—pricked and primed was the pan.
When I went hunting Adam-zad—the Bear that stands like a man.
I looked my last on the timber, I looked my last on the snow,
When I went hunting Adam-zad fifty summers ago.

"I knew his times and his seasons, as he knew mine, that fed
By night in the ripened maizefield and robbed my house of bread ;
I knew his strength and cunning, as he knew mine, that crept
At dawn to the crowded goat-pens and plundered while I slept.

"Up from his stony playground—down from his well-digged lair—
Out on the naked ridges ran Adam-zad the bear ;
Groaning, grunting, and roaring, heavy with stolen meals,
Two long marches to northward, and I was at his heels !

"Two full marches to northward, at the fall of the second night.
I came on mine enemy Adam-zad all panting from his flight.
There was a charge in the musket—pricked and primed was the pan—
My finger crooked on the trigger—when he reared up like a man.

"Horrible, hairy, human, with paws like hands in prayer,
Making his supplication rose Adam-zad the Bear !
I looked at the swaying shoulders, at the paunch's swag and swing,
And my heart was touched with pity for the monstrous, pleading thing.

"Touched with pity and wonder, I did not fire then—
I have looked no more on women—I have walked no more with men.
Nearer he tottered and nearer, with paws like hands that pray—
From brow to jaw that steel-shod paw, it ripped my face away.

"Sudden, silent, and savage, searing as flame the blow—
Faceless I fell before his feet, fifty summers ago.
I heard him grunt and chuckle—I heard him pass to his den.
He left me blind to the darkened years and the little mercy of men.

"Now ye go down in the morning with guns of the newer style,
That load (I have felt) in the middle and range (I have heard) a mile ?
Luck to the white man's rifle, that shoots so fast and true,
But—pay, and I lift my bandage and show what the Bear can do!

(Flesh like slag in the furnace, knobbed and withered and grey—
Matun, the old blind beggar, he gives good worth for his pay).
"Rouse him at noon in the bushes, follow and press him hard—
Not for his ragings and roaring flinch ye from Adam-zad.

"But (pay, and I put back the bandage) this is the time to fear,
When he stands up like a tired man, tottering near and near ;
When he stands up as pleading, in wavering, man-brute guise,
When he veils the hate and cunning of the little, swinish eyes ;

"When he shows as seeking quarter, with paws like hands in prayer,
THAT is the time of peril—the time of the Truce of the Bear !"

Eyeless, noselesss, and lipless, asking a dole at the door,
Matun, the old blind beggar, he tells it o'er and o'er ;
Fumbling and feeling the rifles, warming his hands at the flame,
Hearing our careless white men talk of the morrow's game.

Over and over the story, ending as he began :—
"There is no truce with Adam-zad, the Bear that looks like a man !"

Pure Unadulterated Americanism

THERE are some newspapers in the United States that refused to be swept off their feet by the constant propaganda of the war-makers of the Pacific. *The Chicago Tribune*, the great republican daily of the Middle West, has at all times preserved its equilibrium and been consistent in pointing out the folly of our policy in Eastern Asia. It has accurately sensed the real reasons for our misunderstandings with Japan and places the blame squarely where it belongs. The root of all our trouble with Japan arises from the wobbly, inconsistent and deplorably childish diplomacy of democratic statesmen so intimately associated with China that it has been difficult at times to ascertain whether the state department was an adjunct to the waichaopu or *vice versa*. At all times during the past eight years our minister at Peking has sought opportunities to create issues that would bring us into conflict with Japan. From the time that minister Reinsch challenged the position of Japan in Shantung through the Grand Canal contract to the President's protest against Japan's occupation of Saghalien, the record is one long exposition of pin-pricks which have convinced the Japanese that America is taking upon its shoulders the task of circumscribing their activities and depriving them of the right to defend their national existence. The hold-overs of the past administration are doing their best to fasten this policy upon the nation. The coterie of war-makers are still on the job moving heaven and earth to bring about hostilities. It is comforting to know that there are strong, unadultered American editors who have the courage to speak the truth at this time. We reprint on page 39 an editorial from the *Chicago Tribune* which hits the nail on the head.

America and Japan in Manchuria

Harriman's Plan to Force Japan to Sell the South Manchuria Railway

WHEN the Peace of Portsmouth was signed, relations between Japan and America were most cordial. Japan had fought her great adversary, driven her back beyond the Sungari, and drenched the soil of Manchuria with the blood of her sons. Her reward, the fruits of her victory, consisted of a broken down, busted railway, with its short term lease inherited from Russia. True, she received the southern half of the frozen island of Saghalien, but the one tangible award was the South Manchuria Railway, while Russia retained control over her military line and base in the north, undamaged by the war. Japan had no funds even to convert her prize into a going concern. She was bankrupt, or almost so. She borrowed the funds in England and spent them in the United States to reconstruct the railway. She had to work quickly and be ever on the alert to fortify herself against the return of her formidable enemy.

This was the situation, in brief, when Mr. Harriman, the great railway manipulator, conceived his idea for a round-the-world transportation system, and initiated those fateful and secret negotiations which have since been made to serve as the lever to undermine Japan's position in Manchuria. We could write a book from our own experiences on the various ramifications surrounding the Manchurian controversy, but prefer to let the stoiy be told by Mr. Willard Straight, who speaks to us out of the grave through the pages of the great magazine he created. In effect, Mr. Straight tells us that while he was still acting as consul-general, he was at the same time in correspondence with Mr. Harriman, elaborating a scheme which would nullify Japan's position in Manchuria through competing railway rights.

("Asia")

Major Willard Straight

An American of the Highest Ideals and Principles, who, in his zeal to preserve the Integrity of China and Neutralize Manchuria, Laid the Foundation of American-Japanese Misunderstanding by entering into the Plans of the late Mr. Harriman to influence Japan to Sell the South Manchuria Railway, so it could form part of his World-Girdling Transportation Scheme. Mr. Straight Later became one of the Strongest Advocates of American Co-operation with Japan for the Advancement of China's Interests. Through his advice, Co-operation with Japan was accepted as the solution of the Grand Canal Question. Later on, he Drew up a General Plan of Co-operation which was submitted to the State Department and the Members of the American Group, as a Guide for future American Financial Acti vities in China.

Mr. Straight tells us in no uncertain terms, that the Chinchow-Aigun railway contract (the counterpart of the Taonan-Jehol line) was to be employed as a lever to compel Japan to sell out her rights to the South Manchuria Railway to Mr. Harriman, or, if Japan was unwilling to make such an agreement, then the alternative line would place her in a "very embarassing position in Manchuria." It is well that the reader should form his own opinion from the facts. We republish in full the story of Mr. Straight, from the February 1921 number of *Asia*. It needs no comment. The policy of the consortium, the whole attitude of America towards these questions must undergo a change. We are confident that the American people when they know the facts, will never go to war against a friendly power in order to further the grandiose schemes which originated in the mind of the greatest railway manipulator and stock exchange operator our country has ever produced.

* * *

AN AMERICAN IN ASIA

Willard Straight in Far Eastern Finance

By Louis Graves

The impression that he made upon E. H. Harriman, when the railroad financier visited Korea in 1905, was directly responsible for Willard Straight's entrance into the financial affairs of the Far East. Harriman's imagination had been seized by the vision of an around-the-world Harriman transportation system, with the Trans-Siberian Railway a part of it. It was Harriman of all American financiers who first saw the opportunity for great American development in the Far East and backed his belief with hard personal work and large plans.

"The working out of the Eastern question interests me and there is much we can do to get it started on more direct and straight-forward lines than heretofore," Harriman wrote Straight just before his death after four years of correspondence and relationship with Straight in Far Eastern affairs. And in a letter to another he thus recorded the reason for his interest. "These financial groups are very uncertain and shift and change with the signs of storm or calm. The development work appeals to me more than anything else. After we have determined what we will do, then we can arrange the financing, and how it shall be done and who shall profit by it."

"I understand," wrote Straight in a memorandum, "that the suggestion that Mr. Harriman make the journey of 1905 to the Orient came from the Japanese government, with whom he had established close relations by virtue of the assistance rendered by him and by Mr. Schiff in co-operation with Sir Ernest Cassel of London, in floating the Japanese loan in New York and London. *By reason of the Russian defeat, he believed it might be possible to make some arrangement for the acquisition of the Russian Trans-Siberian line.* In July or early August, 1906, assisted by Mr. Lloyd Griscom, then American minister to Japan and Mr. H. W. Denison, an American attached as adviser to the foreign office, Mr. Harriman reached an understanding with Marquis Ito and Count Katsura, then the Japanese premier, under which Mr. Harriman was to furnish the capital for the reconstruction and operation of the South Manchuria Railway and for the development of various mining, timber and other enterprises along the line. These the Russians had extracted from the Chinese, and the Japanese in turn had taken from the Russians. The Japanese were to have a joint interest and political control in this undertaking. Mr. Harriman was assured there would be no hitch, but was advised that nothing definite could be done pending the result of Count Komura's negotiations with the Chinese government."

A year later Straight learned from Harriman that he had been informed through one of the leading Japanese financiers that the Chinese had not approved and the Japanese had determined to deal with the problem themselves.

"Mr. Harriman's project had not been definitely turned down, but it was obvious that no further progress could be expected," worte Straight. "*Prior to my departure for Mukden,* in *August, 1906, Mr. Harriman asked me to keep him advised as to railway developments in Manchuria. He was still determined if possible to obtain a foothold in that region to carry out his scheme.* Ultimately the Japanese government arranged to obtain in London the funds with which to finance the construction of their South Manchuria road. The Japanese, much to the disappointment of British interests, expended the funds which they had obtained in London in placing orders for railway material in the United States. In doing so, as I understand it, they were partly influenced by a desire to make

His Excellency Hsu Shih-chang

Photograph Taken While He Was Viceroy of Manchuria. Under his Direction the Straight-Tang Negotiations for Undermining Japan and Russia in Manchuria were Initiated. He is now President of China.

Tang Shao-yi

Photograph Taken While Governor of Mukden, at the Time he was Co-operating with Willard Straight to Negotiate an Agreement that would Bring the United States in Manchuria as an offset to Japan and Russia.

Hsi Liang

The Last Manchu Viceroy of Manchuria. Succeeding Hsu Shih-chang, he signed the Chinchou-Aigun Contract.

up in some way for the failure to carry out their agreement with Mr. Harriman."

This decision by Japan to hold fast her claims in Manchuria marked the unfolding of her imperial plan in China. It also marked the beginning of a long and tedious, but obdurate fight, in which Straight played the leading active part—aimed to prevent Japan and Russia from closing in on Manchuria to the detriment of other national interests and Chinese sovereignty. The conclusion five years later of the contract between China and the six power group—the United States, England, France and Germany with Japan and Russia admitted as partners—for joint loans to China, was the first great result of the fight. The consortium of 1920 is the sequel.

The story of the fight begins in the summer of 1907, with Straight as consul-general at Mukden. The general aim was to establish an American economic foothold in Manchuria. The concrete aim was to build a railroad which, by paralleling the South Manchuria Railway (Japanese) and its northern extension to Harbin (Russian), should nullify the strategic control over Manchuria held by Russia and Japan through their possession of this railroad link between the Trans-Siberian line and an ice-free port on the Gulf of Chihli.

"At that time," Straight wrote, "Lord ffrench, representing Pauling and Company [British contractors], and J. O. P. Bland, representing the British and Chinese Corporation, came to Mukden and secured from the Chinese government the right to build an extension of the Chinese Imperial Railways [the line from Peking to Mukden] from Hsinmintun, north to the town of Fakumen, 47 miles distant, with the ultimate right to extend this road to Tsitsihar [about 400 miles north] on the Trans-Siberian Railway. [This would have given a railroad connection from the Trans-Siberian line across Manchuria to the sea, quite independent of the Russo-Japanese line.] I was familiar with these negotiations. *They seemed to offer an opportunity for the realization of Mr. Harriman's plans and for the creation of Anglo-American-Russian co-operation in Manchuria. This I believed to be essential, for I did not feel that the United States was sufficiently strong politically alone to undertake to counter-balance Japanese influence.*"

What the building of this British railroad as a parallel to the Japanese South Manchuria line might have meant politically may be judged from a significant statement recorded by Straight:

"After lunch, Goto's aide [Baron Goto, minister of communications] came in. *He said Japan would, if necessary, with weapons, prevent the construction of the Hsinmintun-Fakumen Railway.*"

The Japanese protested to the British, their allies, and the British foreign office withdrew its support from the scheme, which fell by the wayside. But Straight adapted it later to the plan he was working out, as providing the means for joint American-British action in Manchuria under American leadership.

"I had several discussions with the Viceroy Hsu Shih-chang, now president of China] and Governor [Tang Shao-yi]," Straight wrote, "and as a result drew up an outline of agreement, which would give to American interests the contract for a loan of some $20,000,000, carrying with it the right to establish a Manchurian bank to co-operate with the Manchurian government. This bank would be the financial agent of the Manchurian government in undertaking mining, timber and agricultural development and the construction of certain railways, among others the line from Tsitsihar running north to Aigun on the Amur River. *This scheme I sent to Mr. Harriman in September, 1907. Early in October I received a cable stating that financial conditions in New York were such, brought on by the panic, that the transaction would be impossible.*"

George Pauling

One of Britain's Empire Builders. A Close Friend of Cecil Rhodes, he Built the Railways of Rhodesia and in other ways contributed to the development of South Africa. He had great faith in the future of China. He signed the Chinchou-Aigun construction contract, which the American Group was to finance. Recognizing the Injustice to Japan involved in the construction of this railway, he subsequently complied with the wishes of his government and surrendered his interest in the contract in return for an additional compensation in the Shasi-Singyifu railway contract. He died in January 1919, Beloved by all who knew him.

This plan put up to Harriman for backing was Straight's first important contribution to the solution of the Far Eastern problem through American action. He was convinced of Harriman's intention to put through a big idea and he knew that the panic of 1907 meant only a temporary delay. In the field, he continued to work in close contact with Tang Shao-yi and to keep the state department and Mr. Harriman fully informed at home.

The relationship of these two men—Straight, a mere untried youngster of twenty-seven, out on the field, and Harriman, the greatest railroad-financial genius of his generation, at home, each working with independent mind and vision, with strong confidence in the other and with assurance of America's ability to attain a place of great influence on the Asiatic continent—was a dramatic one. The two stood out alone in the breadth of their vision and resourcefulness. All the time Straight in Manchuria, in touch with actual conditions, was working out plans and the diplomatic facilities for carrying them out, to be put up to Harriman. He was confident that, when the time was ripe, Harriman had the abiding interest and the nerve to put his power behind them. Harriman on the other hand relied with rare confidence on the observing power, vision and good judgment of Straight. So *great was this confidence, that a year and a half later Harriman was making strong representation to the Taft administration that Straight, who considered himself much too young for the post, should be made minister to China.*

In 1908, almost a year from the time Straight first put up his proposition to Mr. Harriman, he was suddenly summoned by cable through the request of Mr. Harriman to return to the United States to discuss the Manchurian financing plans. Harriman had seen that conditions were right financially for reviving the Far Eastern loan. On the night before leaving Mukden—rather, at six in the morning—Straight signed a memorandum of agreement for a $20,000,000 loan along the lines of the discussions of the year before, including a Manchurian railroad. This was a rough preliminary, not the detailed agreement, which it required two more years to get.

"I carried the agreement for nearly six weeks in a small wallet tied about my neck in silk case," wrote Straight. "That memorandum was the groundwork upon which the American group is based."

He was made acting chief of the division of Far Eastern affairs in the state department soon after his arrival in Washington. He took up with Mr. Harriman immediately plans for completing the loan they had discussed.

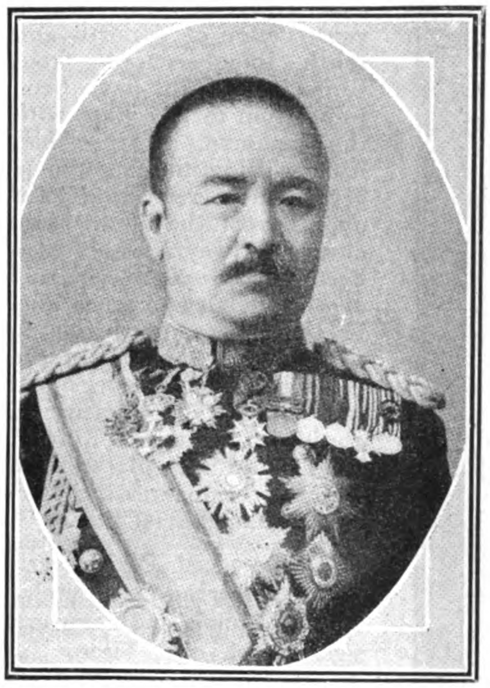
"On the third of December, 1908, by Mr. Harriman's direction, I called upon Mr. Otto Kahn of Kuhn, Loeb & Company and took up with him the question of the loan to China," he wrote. "Prior to my departure from Mukden it was determined that China was to send Tang Shao-yi as special ambassador to thank the United States for the return of a portion of the Boxer indemnity, and that on his arrival in America he should complete the negotiations for the loan the preliminary agreement for which I brought home with me. In the meantime, early in November, both the Empress Dowager and the Emperor Kuang Hsü died suddenly. At the end of October, moreover, Baron Takahira, who was then Japanese ambassador to Washington, had suggested to President Roosevelt and Mr. Root that, in order to prevent any difficulty between Japan and the United States in the Pacific, there should be an interchange of notes regarding the preservation of the "open door" in China, stipulating that both the United States and Japan should mutually respect the other's interest in the Far East.

"It seemed obvious that Japan was endeavoring to forestall the arrival of Tang Shao-yi and the attempt which it was believed he would make to reach some understanding with the United States, by making it appear through the interchange of such notes that there was a virtual alliance between the United States and Japan. Mr. Root and President Roosevelt were induced to postpone the actual signature of these notes until Tang's arrival. He reached Washington on November 30, the notes were shown him at noon that day by Mr. Root and the notes themselves were signed at four o'clock in the afternoon.

"Tang was very much discouraged. On the death of the Emperor Kuang Hsü, his nephew was named as his successor and his brother, Prince Chun, appointed Regent. The Regent hated Yuan Shih-kai and every effort was made to remove him from office. *Yuan, however, was endeavoring to hold his position by claiming that, through Tang's negotiations in the United States, he would be able to secure American support, which would counterbalance Japanese domination in Manchuria.* The interchange of notes with Japan was promptly used by the Japanese, who were intriguing against Yuan, to prove that Yuan had failed in securing American support and that the United States instead of supporting China against Japan had in reality concluded a virtual alliance with the Japanese government. Yuan was driven from power early in January, 1909, and Tang himself left the United States for London shortly afterward. He felt that any further discussion of the loan was useless. The loan negotiations were dropped for the time being."

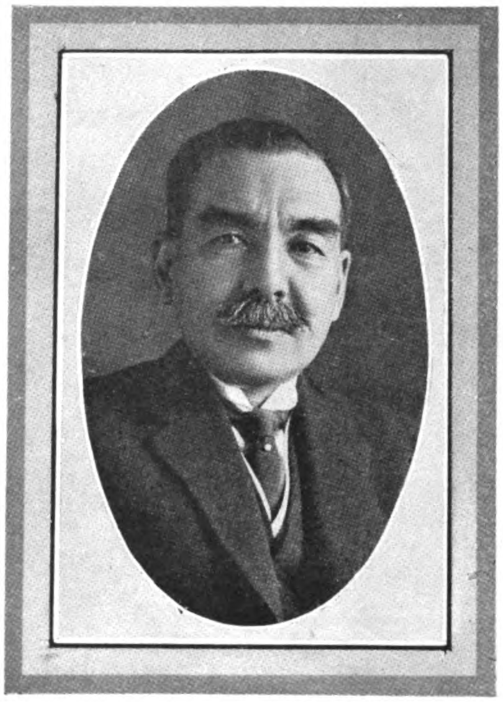
But they were dropped only from the Chinese end. The American negotiators were, if anything, more determined than ever to see things through. Mr. Harriman reverted to his original plan of 1905-1906 for the purchase of the Japanese and Russian lines in Manchuria. But during the subsequent conferences in the early part of 1909, a complementary and alternative scheme evolved. *This was to secure from the Chinese a definite contract for the building of another railroad in Manchuria, which could be used as a lever to influence the sale of the Japanese and Russian lines or, failing in this, could be built as an alternative line.* Straight tells of these developments as follows:

"While these events were taking place in Washington and China, Mr. Harriman had kept closely in touch with the situation and my discussions with Tang Shao-yi. In November, Mr. Schiff, who was in close touch with Mr. Gregory Wilenkin, formerly the Russian financial agent in the United States and then the Russian agent in Japan, had been advised that there was still some possibility that Russia would be willing to sell the Chinese-Eastern Railway, if Japan would agree to sell her Manchurian line. Mr. Schiff wrote to his friend, Baron Shibusawa, to ask whether the Japanese would be willing, in view of the previous memorandum of agreement with Mr. Harriman, to sell the South Manchuria Railway to American interests, provided the Russians would sell the Chinese Eastern.



Count Katsura

Premier of Japan in 1906, who with Prince Ito Negotiated with Mr. Harriman for Joint American-Japanese financing and operation of the South Manchuria Railway.



Hikokichi Ijuin

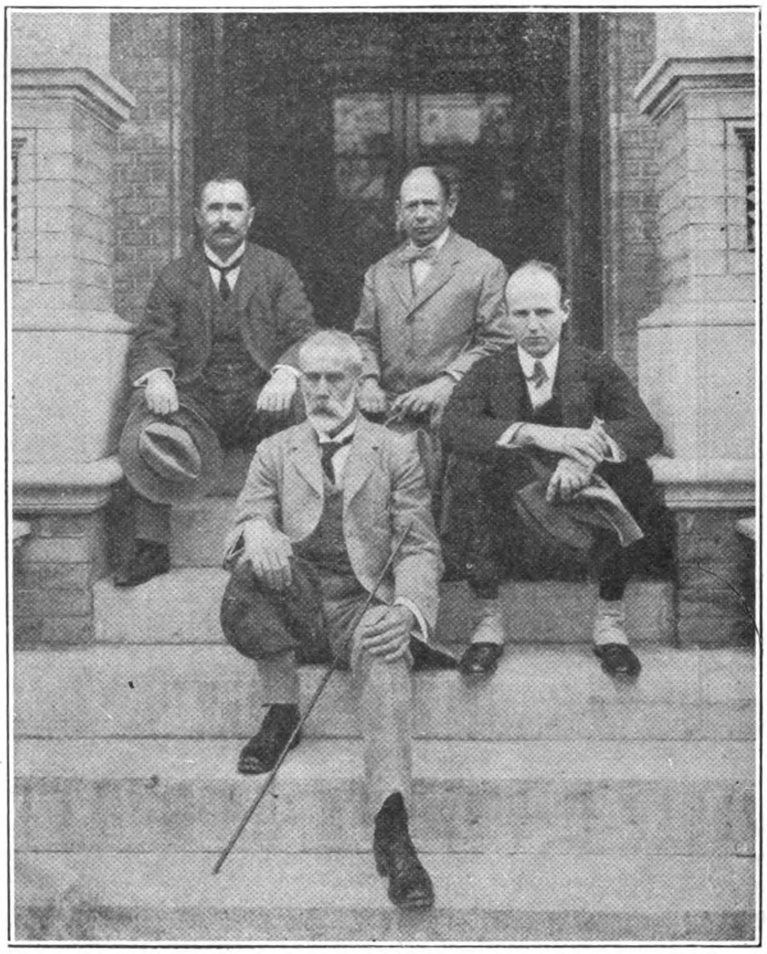
Japanese Minister at Peking in 1910, Who Proposed to The Chinese Government that Japan be Permitted to Participate in the Financing and Construction of the Chinchou-Aigun Railway. The Proposal was Rejected on the Grounds that China could not Consult any Foreign Nation about the Development of her Railways. Also Rejected by the Americans.

Prince Ito

With Count Katsura he agreed to Permit Mr. Harriman to Furnish the Capital for the South Manchuria Railway. The Plan was Rejected by China

"*This proposition the Japanese turned down. Early in December, I prepared a memorandum as to the basis upon which these two lines might be acquired.* The matter had been taken up with Tang Shao-yi, who had said that China would be glad and would cooperate if we could organize an international syndicate to purchase both lines on behalf of China, thus anticipating the provision for repurchase of the lines contained in the original agreement of 1896 between China and Russia. This memorandum I believe formed the basis for the Knox neutralization proposals [for an international syndicate to buy out the Russian and Japanese railroad holdings in Manchuria]."

Here the situation becomes complicated by the introduction of discussion of another loan to enable American financial interests to take up participation in the building of the Hukuang Railways in South China. The state department had been fighting for the right of American finance to enter this loan with the British, French and Germans. There were therefore three ideas moving concurrently in the minds of the Americans. First and immediately came the effort to purchase the Russian railroad in Manchuria. Secondly, there was the necessity for immediate action to enable the United States to take its place in the Hukuang loan. *Thirdly, there was the fundamental plan in the minds of Harriman and Straight to obtain from the Chinese a Manchurian railway contract to make the American position secure, whether the Russians or the Japanese sold their railroad or not. This contract, later secured, was known as the Chinchou-Aigun plan.* The negotiation of the contract was to be the first essential in the American position. But no contract with the Chinese could be official without a ratifying edict. And therefore the edict for this contract, told of later in the story, became the key to the whole American position. It was in the development of this idea for the Chinchou-Aigun Railway that Straight contributed his first big share in the team-work with Harriman and the group of American financiers now interested.



The Peking Representatives of the old Four-Power Group
M. Cordes (German); M. Casenave (French);
E. G. Hillier (British); Willard Straight (American)

"Early in May, Kuhn, Loeb & Company decided to send a representative to China to endeavor to complete the loan negotiations which had been undertaken the previous year," Straight wrote. "Subsequently it became obvious that unless American financial interests were willing at once to enter the field, the right to participate with the British, French and German interests in the construction of the Hukuang Railways would be lost to the United States. At this time I was working very closely with Mr. Robert Bacon of J. P. Morgan & Company. That firm was also thinking of sending a representative to Peking, and, in order to secure co-operation between the American financial interests, and to secure as strong representation as possible, it was agreed in June to form the so-called American group, consisting of J. P. Morgan & Company, Kuhn, Loeb & Company, the First National Bank and the National City Bank, and I was designated as their representative. The group was finally organized early in June.

"Mr. Harriman sailed for Europe at the end of May and I followed at the end of June. In early July we had a conference in London regarding the Hukuang Railways without reaching any satisfactory understanding. Shortly after, I went to Bad Gastein where Mr. Harriman was then taking the cure. I stayed two days with him and talked over the Far Eastern situation very fully.

"No one I think, was familiar with Mr. Harriman's plans for his Manchurian railway and round-the-world transportation system. I doubt very much if Mr. Kahn knew the details and I am quite sure that none of the other interests of the American group, in which Mr. Harriman also had a participation, were at all familiar with his ideas. While in Paris Mr. Harriman had arranged with Mr. X——to go to Petersburg to discuss with the Minister of Finance the possible purchase of the Chinese Eastern Railway [the northern Manchuria line]. I was to endeavor to secure from the Chinese government the right to build a line from the Gulf of Chihli to run north to the Trans-Siberian Railway, possibly up to the Amur.

"Once an agreement had been reached with the Russians and the right for the construction of a north and south line secured from China, we would have been in position to negotiate with the Japanese. If they had been willing to make some arrangement regarding joint operation of the South Manchuria Railway, it would have been unnecessary to construct another north and south line. If they were unwilling to make such an agreement, the construction of another north and south line operating in conjunction with the Russian road would have placed them in a very embarrassing position in Manchuria.

"I reached Peking early in September and on October 2, with Pauling and Company, signed with the Viceroy of Manchuria an agreement for the construction of a line from Chinchou on the Gulf, to Aigun on the Amur, making the first step in Mr. Harriman's scheme. This line was to be financed in America, and to be constructed by Pauling and Company, who had the original concession from the Chinese government for the line from Hsinmintun to Fakumen. We hoped thus to have the advantage of securing Anglo-American co-operation.

"I had received word of Mr. Harriman's death on September 10. Returning to Peking from Mukden, I found a letter from Mr. Harriman, written on the way from Paris to Cherbourg, in which he told me that X——had come back from Petersburg, where he had arranged with Kokovtseff, the minister of Finance, that on his return to Russia from a trip which he was about to make to Vladivostok, he (Kokovtseff) would recommend the sale to American interests of the Chinese Eastern Railway. Mr. Kokovtseff in accordance with his promise did on his return make this recommendation.

"The arrangement had been made with Russia, the contract secured from the Chinese government, but the directing genius had gone. I cabled to New York, urging the group to get in touch with Mr. Harriman's secretary and familiarize themselves with

his plans. I had previously urged that a representative be sent to Petersburg in order to negotiate with the Russians but this recommendation had been turned down. No one in New York knew precisely what Mr. Harriman had in mind; no one was capable of carrying through his scheme. The group, I understand, advised the state department of the arrangement which Mr. X——had made. Shortly after, they cabled me, asking whether the imperial edict had been issued, ratifying my preliminary agreement with the Viceroy of Manchuria.

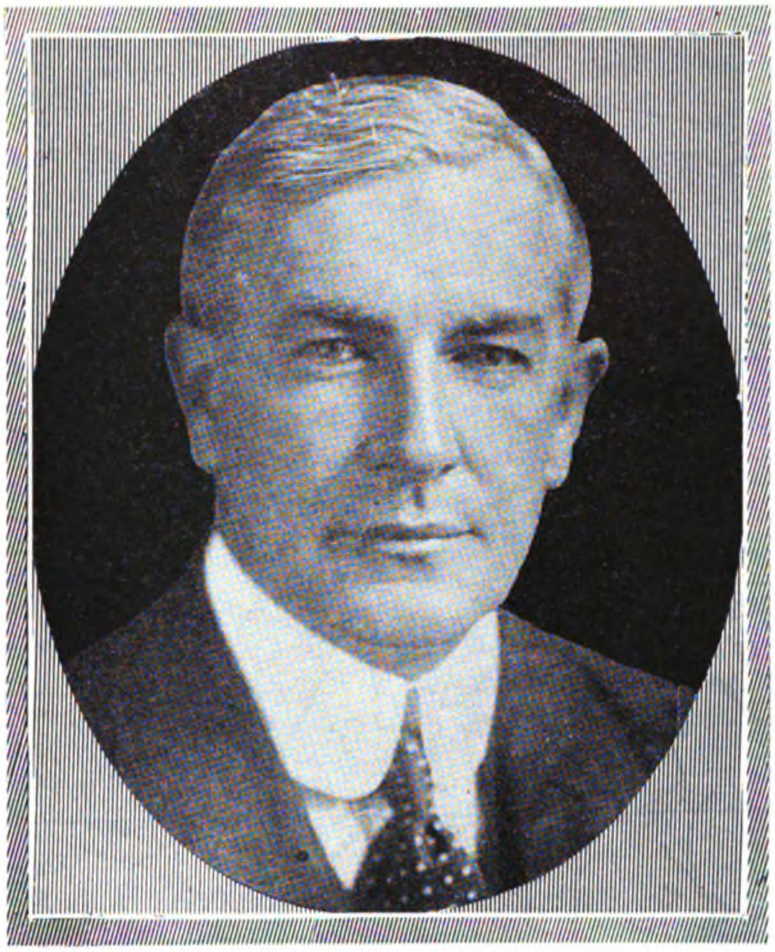
"I replied that from reliable sources I understood that the edict had been issued. [As a matter of fact, it had not, though a secret and vague conditional edict had.] Without cabling the legation, which at that time was in charge of Fletcher [recently ambassador to Mexico], without waiting for confirmation from me, the state department, on the basis of the report above mentioned, launched the neutralization proposals [the invitation sent to the Russian, Japanese, Chinese, British, French and German governments to join in an international arrangement to buy out the Russian and Japanese railroad possessions in Manchuria with an alternative proposition to join with the United States in building the Chinchou-Aigun Railway, the potential rival of the Russian-Japanese line].

"The scene had been set, but to carry through the plan it would have been necessary to conduct unofficial conversations with both Tokyo and Petersburg, to secure the approval of London and Paris and possibly of Berlin, and then, when all arrangements had been made, to make an official proposal. *It would have been wiser, probably, in any case, to have left these negotiations in the hands of private individuals. The scheme was all right but it required delicate handling instead of blacksmith methods.* In Russia, M. Izwolsky, the minister of foreign affairs, was a bitter enemy of Kokovtseff. Also he was anti-American. Izwlosky desired a closer understanding with Japan and Kokovtseff wished to work with American capital. By handling these neutralization proposals through diplomatic channels, the negotiations were placed in the hands of Izwolsky and not of Kokovtseff. Izwolsky used the whole scheme and the bogy of an American incited anti-Russian China, which he built upon it, and the manner in which it had been presented, to convince his colleagues in the government that the only protection against American intrigue was a rapprochement with Japan. He was successful. The proposals resulted in a rebuff to the United States, the nullification of all work which had been done by Mr. Harriman [in endeavoring to buy or internationalize the Russian and Japanese lines in Manchuria] and the signature of the Russo-Japanese agreement of July 4, 1910 [for mutual co-operation and protection of interests in this territory], which practically lost Manchuria and Mongolia to China."

Whatever declaration Russia and Japan had made in treaties and conventions, what these two did *not* want was the "open door" in Manchuria and they quickly came together to defeat it.

The Knox neutralization proposals came out early in 1910 and immediately threw the Russians and Japanese into each other's arms. But though the Knox proposals forced the Russians and Japanese to refuse definitely to sell their railroad lines in Manchuria and furthermore aroused their intense opposition to the building of the Chinchou-Aigun Railway, Straight and Fletcher kept fighting for it with confident hope of success. Ahd success they achieved in the final contract signed by the Chinese a few months later.

"Fletcher managed to extract the Chin-Ai edict from the Chinese," wrote Straight, "on practically the same day that the Knox proposals were published, and Washington's face for the moment was saved—a little bit." But the final agreement for the loan still had to be drawn.



Henry P. Fletcher

American Chargé d'Affaires at Peking, Whose Keen Diplomatic Mind and Support Dominated the Chinchou-Aigun Fight in Peking Which Resulted in Victory for the Group Representative, Mr. Straight. Now Assistant Secretary of State.

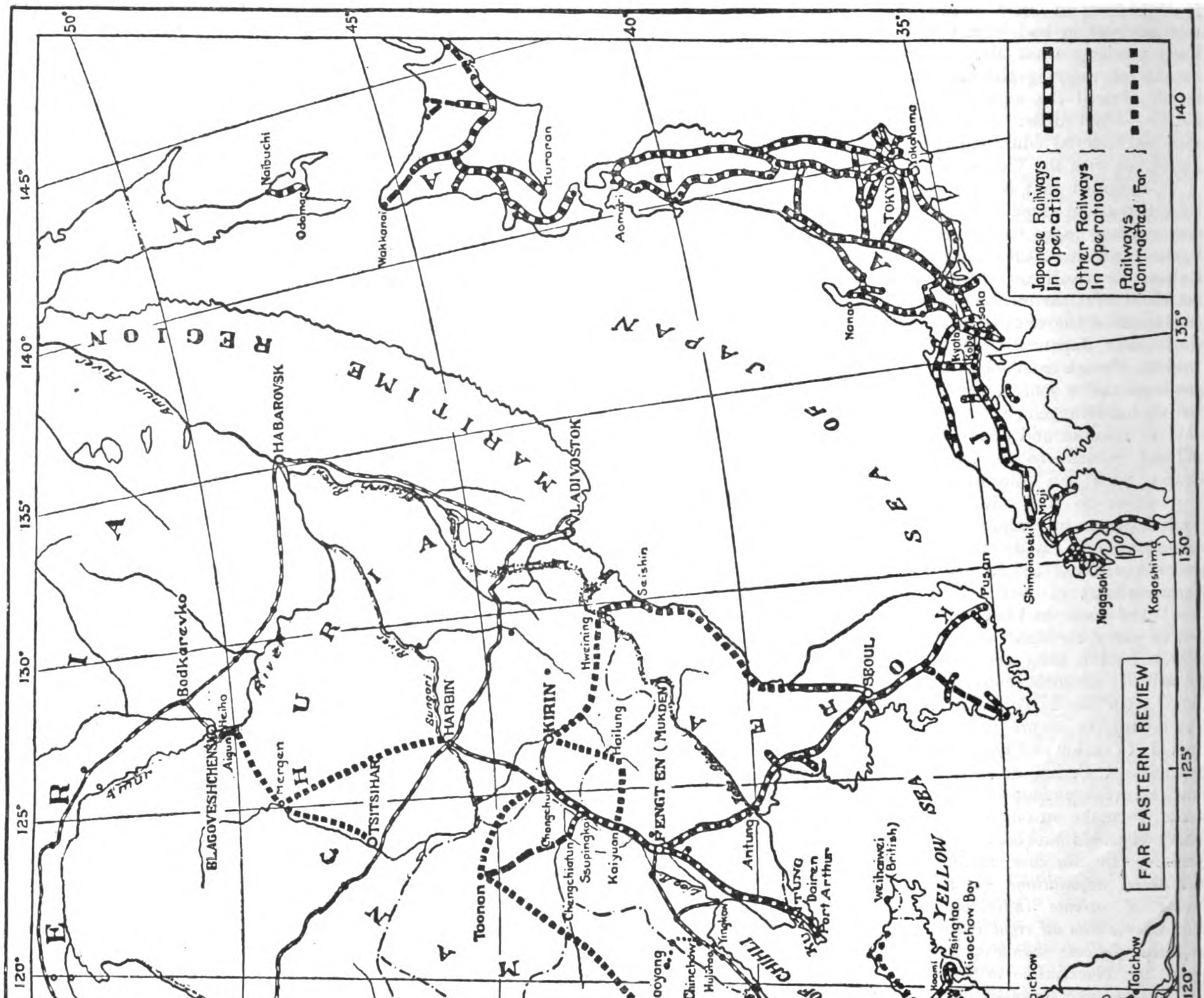
"Our whole play is to work China's fear of Russia and Japan to get our detailed agreement through," Straight wrote later, "then to take Japan and Russia out of the way. Had we done this first and then tried to put through out detailed agreement, the Chinese would have laughed at us.

"The Russians have put their foot down and the Chinese are in a blue funk. They will not move until forced into action by our government. Whether Washington can do more than it has done already to help this ungrateful, vacillating, weak-kneed lot of officials, I don't know. It could if they'd do even a little to help 'emselves."

"Fletcher and I threatened Korostovetz [Russian minister] the other day," wrote Straight on April 17, "that if he didn't get his government to allow our railway to go through without further protest, we'd jolly well have Pauling & Company and the group open an office in Tehearn and Constantinople and make a little trouble there. He was quite inclined to take us seriously.

"I saw that the Chinese were dilly-dallying and would continue to do so indefinitely if they were let. I saw that, once we had them under agreement, we could go no farther until we had either squared or defied Petersburg. The last course we could only risk as a last resort. Furthermore, our only club to bring the Chinese to terms was a threat to leave them to the mercies of Japan and Russia. So when things were pretty well settled, I announced that I would leave for Russia and New York. If they closed before I went, I should negotiate on their behalf with the Russians; if not, I should return to New York and report that they were not seriously anxious to build a railway, but were only using us for political purposes." Straight wrote this on April 21.

"Before I left China in April," he wrote later, "we had completed our negotiation of the final agreement for the Chin-Ai line. The Russians and Japanese had entered protests at Peking. But we hoped to be able to reach some understanding with the Russians.



RAILWAY MAP OF NORTH CHINA

To this end I went to Petersburg in June, 1910, and met the ministers interested. I came away convinced that if we started to build our line and told the Russians we would only go as far as Taonanfu for the time being, we would eventually be able to complete the work. This proposition, however, was turned down.

"The Chinese wished to know what the American government was going to do about it all. The Russians, however, had clearly stated that, though they couldn't stop our building the line and had no treaty rights on which to base their protest, they would jolly well take it out of China if she tried to cross their Trans-Siberian road at Tsitsihar, and approach the Siberian frontier. We ourselves couldn't fight. The Chinese would have gone ahead if we had promised to back them up, but this we could not do, and, had we pushed the matter, we should probably have gone off scot-free and seen China lose a slice of territory or two. Our government, therefore, say down in front of the stone wall to the construction of which it had so largely contributed."

This conclusion of Straight's was set down long after the the event but during this spring of 1910 hope of success for the Chin-Ai plan ran high. This hope was strongly encouraged by the belief that England, through its alliance with Japan and the influence it could surely exert, if it would, at St. Petersburg, would stand for the "open door," particularly as British interests were directly involved. But instead, England herself yielded.

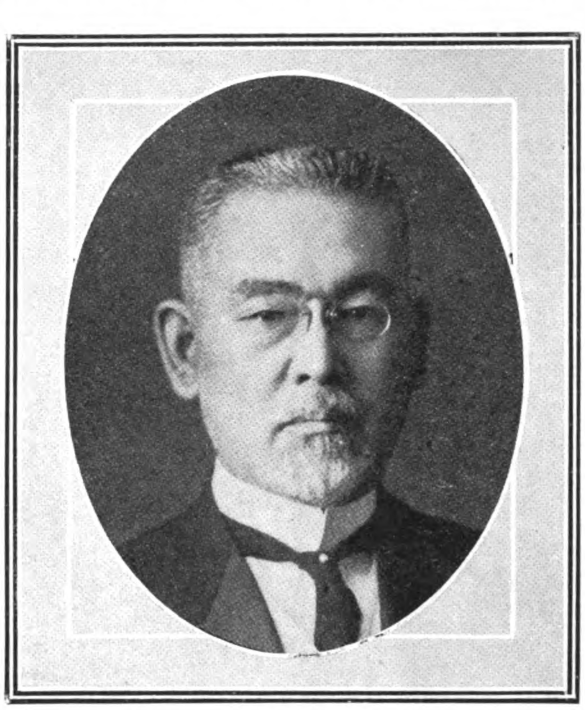
"It's not the 'open door' but the 'door mat' policy—and China pays," wrote Straight. "An intimation from Sir Edward Grey to Japan that interference with this project would be regarded as a serious breach of Japan's treaty obligations, and a hint that the London market might tighten against Japan as a result, would have chastened her at once. Had Downing Street firmly but politely told Russia that, if she continued to oppose China's legitimate development in Manchuria, it would be necessary for Great Britain to reconsider her position all along the line, Russia would have been careful. British weakness has been the signal for Russian and Japanese bullying."

The Chinchou-Aigun project was therefore practically dropped. But for Straight it only meant but one battle in the fight and he turned to other projects—the currency loan and the Hukuang loan—to attain the same end.

Straight had come to Peking athrill at the prospect of setting in motion a vast development. The Manchurian loan and the Hukuang loan were matters immediately at hand. But he saw them as the beginning of a new era for China—the symbol and the promise of still greater things to be. Not bankers' profits but the sweep and bigness of the whole scheme—its meaning to the future of his country and to millions of men in Asia—stirred his imagination. Hence the atmosphere of distrust in which he found he had to work fell, at times, like a pall over his spirit.

"What bitterness there is in this China game!" he wrote in one of his letters home. "It is sickening sometimes. It is almost impossible for you to realize the pettiness and suspicion that prevail here, where every one more or less is spying on every one else. It is the storm centre of world politics, and the foreign community is very small. We see each other nearly every day—there are but few outside influences and diversions—and this brings out the little meannesses of human nature.

"Because one man does not invite another to dinner, because A's wife doesn't call on B's, B curses A and blocks his business. A invites B to dinner and pumps him dry; and if B be weak or vain, the chances are that A will learn things B has no right to divulge. You are up against the game all the time; each party to it finds little respite; for even our distraction must be shared by the same fighting crowd, who carry the scrap with them to the dinner-table and the polo-field."



Baron Goto

First President of the South Manchuria Railway, whose Aide said Japan would Fight to Prevent the Construction of a Parallel Line

More Meddling with Japan

From the *Chicago Tribune*, January 28, 1921

"IT is proper for the department to get an explanation of the Langdon shooting, but the policy of the United States towards the westward expansion of Japan is one for the new government to formulate, and it should not be embarrassed by questions directed by the present administration to the Japanese government.

Mr. Harding may not care to have the question asked. Mr. Harding may believe that it is to the best interests of the United States that Japan should do her expanding at the expense of Asia, and that she should turn away from the Americas. We do not know and neither does the Wilson government know, and it cannot with propriety anticipate decisions.

Mr. Wilson has been devoted to pin pricking Japan. If the United States has a vaild interest in Asia it is in strengthening and forwarding the traditional friendship between China and the United States. Yet Mr. Wilson, where the real interests of the United States were involved, asked the United States senate to give its moral approval to the transfer of Shantung province to Japan.

The senate would not do this, but Mr. Wilson insisted upon it. He was willing that Japan should be confirmed in this possession, but when the occupation of Saghalien and Siberia by the Japanese came up he protested. The only interest the United States could have in the Siberian advancement of Japan would be related to a policy which has not been formulated. That policy would require the restriction of Japan in order that she should not acquire dominion, resources, and power which would make her dangerous.

It is in itself a very dangerous policy and would require a strong hand. If the state department keeps pecking away at Japan it virtually will commit us to this policy and nothing else in the United States, and worst of all our military policy, is not in accord with it.

If it is America's decision to restrain Japan within her gates the United States must be big enough for the job. It cannot be done by sticking pins in Japan. Mr. Wilson's ideas with regard to Asia have been consistently curious. How his indifference to our friends, the Chinese, can be reconciled to his fervent watchfulness over the Siberians, who mean nothing to us, we do not know. We could not protect the Chinese and deliver them, but we need not go out of our way to sanction the taking of their rich province. We cannot protect the Siberians, and we ought not to go out of our way to make Japan mad by our interference. Mr. Wilson tried to put us in just as bad as we possibly could get in both directions."

HSU SHIH-CHANG
President of the Chinese Republic

THE CHINESE CONSORTIUM

THE DOCUMENTS IN THE CASE

THE VAGARIES OF DIPLOMACY

VISCOUNT SUTEMI CHINDA
Japanese Ambassador to the Court of St. James

EARL CURZON OF KEDLESTON
Britain's Secretary of State for Foreign Affairs

THE STORY IN A NUTSHELL

CASTING diplomacy to the winds, Viscount Chinda, the Mikado's ambassador to the Court of St. James, informed the British Secretary of State for Foreign Affairs, that "the Taonan-Jehol railway and the line connecting a point thereon with a seaport, were projected with the strategic object of making it a means of common defense on the part of China and Japan against foreign invasion coming from the direction of Urga." In effect, owing to the weakness of China to guarantee Japan against attack by Russia, it became necessary for Japan to erect a wall along the Inner Mongolian border as an outer strategical bulwark for the defense of China and her own existence.

Lord Curzon, Britain's Secretary of State for Foreign Affairs, is the highest authority on Asiatic problems and policies. Some years ago, when Russia was making her forward moves in Central Asia, Great Britain erected a wall in Persia for the defense of her empire against an invasion coming from that direction. Persia's weakness and corruption became a menace to the British Empire. Earl Curzon then declared that the recognition by any power of "Russia's right to a port on the Persian Gulf would be regarded as a deliberate insult to Great Britain, an intentional provocation to war." Times and conditions change. Japan called upon her Ally to support her in maintaining the wall in Inner Mongolia for the defense of her empire against an invasion coming from the direction of Urga. "You must demolish your wall," answered Earl Curzon, in effect, and trust to Great Britain, France and America to see that your vital interests are never placed in jeopardy in these regions." History repeats itself. Deprived in 1895 of the fruits of her victory over China by a coalition of the three strongest military powers, Japan, again, in 1920, was compelled under pressure of a coalition of the three strongest military powers, to sacrifice her right to national self-defense in Inner Mongolia, America becomes a Policeman of Asia compromised to defend Japan against a future menace from the direction of Urga.

The China Consortium Documents

1.	American State Department to American Group Banks...	July 9th, 1918
2.	American State Department to Embassies	Octocer 8th, 1918
3.	American State Department to British Embassy	May 31st, 1919
4.	Resolutions Adopted by the Bankers' Conference	
5.	Mr. Odagiri to Mr. Lamont	June 18th, 1919
6.	Mr. Lamont to Mr. Odagiri	June 23rd, 1919
7.	American State Department to Embassies	July, 3rd, 1919
*8.	To American State Department from Japanese Embassy...	
*9.	American State Department to Japanese Embassy	
10.	British Foreign Office to Japanese Embassy	August 11th, 1919
11.	Japanese Embassy to British Foreign Office...	September 1st, 1919
12.	British Foreign Office to Japanese Embassy	November 20th, 1919
13.	Japanese Embassy to British Foreign Office...	March 16th, 1919
14.	American State Department to Japanese Embassy...	March 16th, 1920
*15.	The Japanese Ambassador to Earl Curzon	
16.	British Foreign Office to Japanese Embassy	March 19th, 1920
17.	Japanese Embassy to British Foreign Office...	April 14th, 1920
*18.	The Japanese Ambassador to Sir Eyre Crowe	
19.	British Foreign Office to Japanese Embassy	April 28th, 1920
*20.	Department of State to the Japanese Embassy	
21.	Japanese Embassy to British Foreign Office...	May 10th, 1920
22.	Mr. Kajiwara to Mr. Lamont...	May 11th, 1920
23.	Mr. Lamont to Mr. Kajiwara...	May 11th, 1920
24.	British Foreign Office to Japanese Embassy	May 17th, 1920
25.	French Foreign Office to Japanese Embassy	May 25th, 1920

**For the Documents marked with an asterisk we are indebted to the American Consulate and Reuter's.—Ed.*

JOINT NOTE FROM BRITISH, AMERICAN, FRENCH AND JAPANESE LEGATIONS AT PEKING TO CHINESE FOREIGN OFFICE, DATED SEPTEMBER 28th, 1920.

EXCELLENCY,—The governments of France, Japan, the United States of America and Great Britain considering that the time has now arrived to make a joint communication to the Chinese government on the proposed scope and objects of the so-called new consortium which has been under discussion between the four governments for some time past, the undersigned representatives of France, Japan, the United States of America and Great Britain have the honor to state as follows :

In the course of 1918 the United States government informed the other three governments in question of the formation in the United States of America of an American group of bankers for the purpose of rendering financial assistance to China. The principles underlying the formation of the American group were that all preferences and options for loans to China held by any members of this group should be shared by the American group as a whole and that future loans to China having a governmental guarantee should be conducted in common as group business, whether these loans were for administrative or for industrial purposes.

In notifying the other three governments of these proposals the United States government recognized that the war had created such a mutuality of interests between certain governments and peoples as to render this co-operation essential to any constructive program of financial assistance to China. It was suggested therefore that the other governments which were largely interested in China and in a position at the time to render such assistance—viz., France, Japan, and Great Britain—might be willing to join with the United States in its proposed plan and consent to the formation of similar national groups organized on the same basis to act in co-operation with the American group. In the proposal of the United States government which in practice envisaged a reconstruction of the old consortium it was specifically stated that there was no intention of interfering with any of the rights of that consortium. The hope was expressed, however, that the new national groups formed might be made so broad as to include the members of the former consortium as well as others who had legitimate claims to such inclusion, so as to meet the larger needs and opportunities of China in a spirit of harmony and of helpfulness rather than of harmful competition and self-interest.

The proposal of the United States government as here outlined received the most careful and friendly consideration on the part of the French, Japanese and British governments which resulted in a meeting to be held in Paris on May 11th and 12th, 1919, at which the chief representatives of the four groups were present to discuss the financial details of the proposed arrangement as well as the scope and limit of their activities.

A draft arrangement between the four groups was then drawn up embodying *inter alia* the principles of the American proposals. While it is not the intention of the present note to do more than outline the broad aspects of the question or to enter into financial details which await confirmation by the groups at the forthcoming inter-group meeting to be held in New York in October next, we consider it advisable to make the position clear in regard to an essential point which might otherwise give rise to misapprehension, namely, the amount of support to be given by the respective governments to their national groups or to the consortium as a whole.

It is to be understood that the governments of each of the four participating groups undertake to give their complete support to their respective national group members of the consortium in operations undertaken pursuant to the inter-group arrangement entered into by the bankers at Paris, which arrangement in turn relates to existing and future loan agreements involving the issue for subscription by the public of loans having a Chinese government guarantee subject to the proviso that existing agreements for industrial undertakings upon which substantial progress has been made may be omitted from the scope of the arrangement.

A collection of documents which have passed between the governments interested in the consortium as well as certain letters exchanged between the American and Japanese group representatives which are herewith enclosed will enable the Chinese govern-

Thomas W. Lamont
Of the firm of J. P. Morgan & Company, Chairman of the Consortium and Head of the American Group, under whose direction the Negotiations were brought to a successful termination

Frederick W. Stevens
Representative in Peking of the American Group, formerly a Michigan attorney and associated with J. P. Morgan and Company

ment to follow the course of the negotiations and understand the whole position.

In making this communication to Your Excellency the undersigned venture to reiterate the earnest hope of their respective governments for the early consummation of a united government in China so that the new consortium may eventually be enabled to give practical expression to the desires of the four governments concerned to assist in the future development of this country.

DEPARTMENT'S LETTER OF JULY 9th, 1918, TO THE BANKERS OUTLINING CONDITIONS OF CONSORTIUM.

Messrs. J. P. MORGAN and COMPANY,
Messrs. KUHN, LOEB and COMPANY,
NATIONAL CITY BANK of NEW YORK,
FIRST NATIONAL BANK of NEW YORK,
CHASE NATIONAL BANK,
CONTINENTAL AND COMMERCIAL TRUST AND SAVINGS BANK,
Messrs. LEE, HIGGINSON AND COMPANY,
GUARANTY TRUST COMPANY of NEW YORK, New York City.

GENTLEMEN,—Your letter of July 8th, 1918, has had my very careful consideration. It contains several elements of an important nature which I will take up in order.

This war has brought the countries of Great Britain, France, Japan, the United States and some others into a state of harmony and helpfulness, and has supplanted an intense spirit of competition by a spirit of mutuality and co-operation in matters relating to their interests abroad. Doubtless this situation is in a measure due to the absence of capital seeking foreign investment at the present time because of the demands upon it for war purposes.

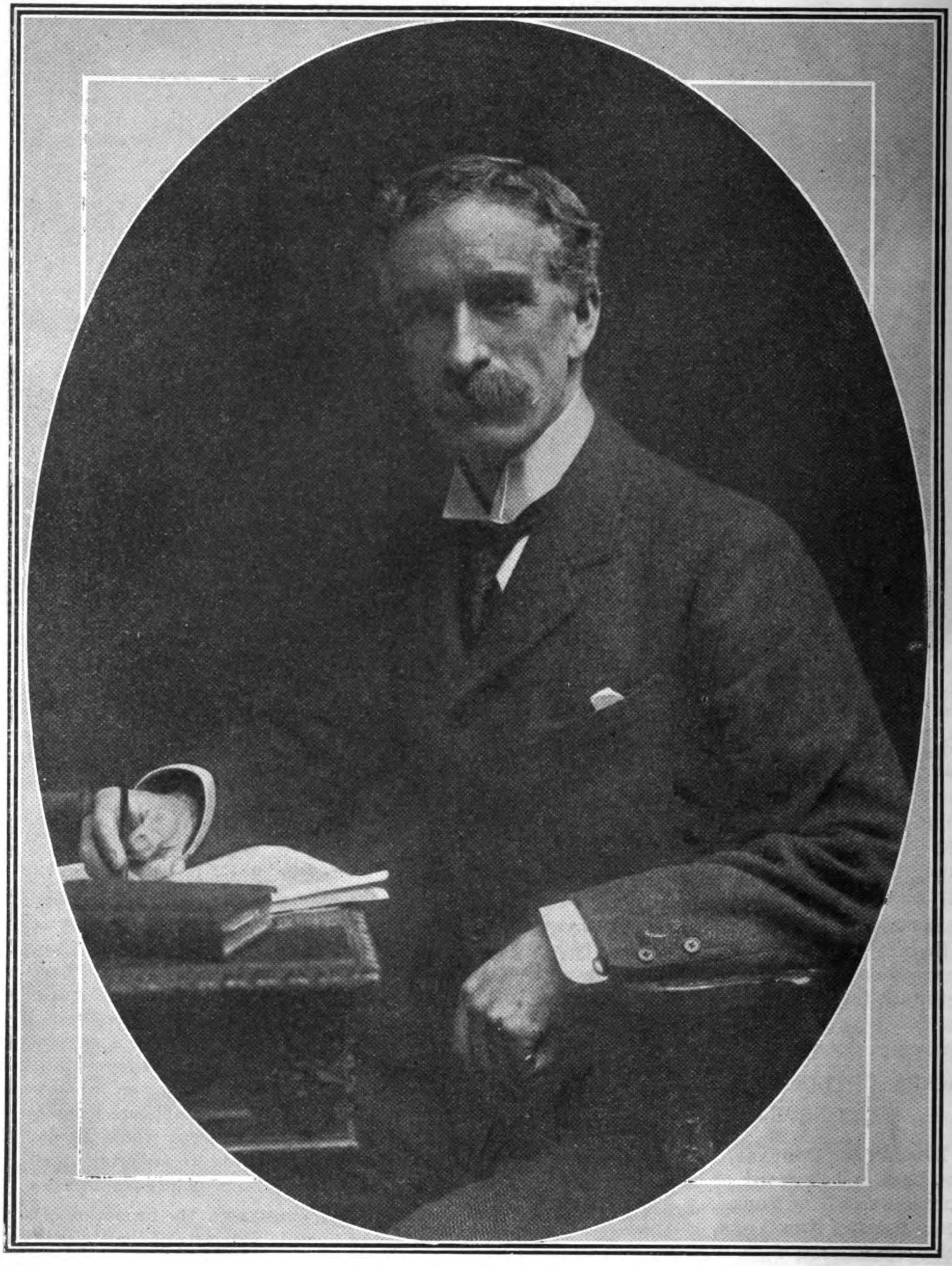
If international co-operation is necessary, as seems to be the case, for the successful flotation of the proposed loan, I realize that the support of Great Britain and France would be desirable even if it should be necessary for the United States and Japan to carry for the time being their respective portions of the loan. All four powers are of course, deeply interested in any measures taken to strengthen China and fit her for a more active part in the war against the central European powers. Japan is already considering rendering financial assistance, while two of the loans that have been mentioned as desirable are loans by which the interests of British and French citizens would be directly affected and it would, of course, be unwise to undertake their negotiation without consulting parties so immediately concerned.

In these circumstances the formation of a four-power group, to consist of financial interests of the United States, Great Britain, France and Japan to deal with the government of China for purposes of making loans to that government seems advisable and it is my hope that in this way the whole subject of finance in China can ultimately be treated in a broad way. If the terms and conditions of each loan are submitted to and approved by this government, and the other co-operating governments and by the government of China, this government would not only interpose no objection, but, on the contrary, would consider such an arrangement an assurance that the welfare of China and the proper interests of the other governments were of such a mutual character as to permit of close and friendly intercourse for their common

good, I think that I should say frankly that this government would be opposed to any terms or conditions of a loan which sought to impair the political control of China or lessened the sovereign rights of that republic.

In response to your inquiry, as to whether the government would be willing at the time of its issue to state that the loan was being made at the suggestion of the government, I will say that the government has suggested that this loan be made and would have no hesitancy in formally stating that fact at the time of issue.

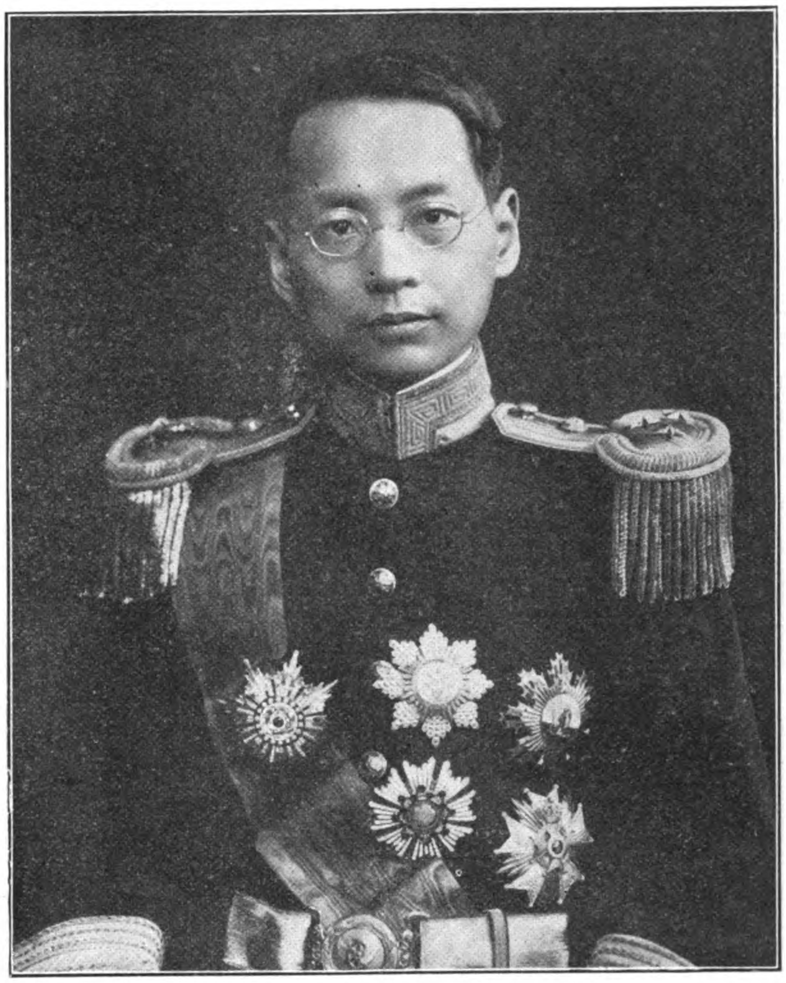
The question of relinquishment by the members of the American group of any options to make loans now existing in favor of any of them seems to be a reasonable condition of membership in that group. Such relinquishment be a member of a foreign group is a matter over which this government would have no control. However, I may say that if the members of the American group come to the conclusion that they desire it, this government will use its good offices, in so far as it can properly do so to bring about such relinquishment.



SIR CHARLES ADDIS

For Many Years Chairman of the Court of Directors of the Hongkong and Shanghai Banking Corporation. Head of the British Group in the Consortium. Unquestionably, the Greatest Authority on Chinese Finances and Railway Problems. Sir Charles Declares that the Consortium Policy must be a Railway Policy.

Chow Tsz-chi
China's Minister of Finance, with whom the Consortium must deal in making a loan



Yeh Kung-cho
China's Minister of Communications, who is going ahead building Railways with Chinese funds.

The war has created a community of interest between certain governments and their citizens and those of other governments and has broken down barriers that once have existed and made easier the intercourse between them. With the consequent expansion of our interests abroad there must be considered also the element of risk which sometimes enters into the making of loans to foreign governments and which is always inseparable from investments in foreign countries where reliance must be placed on the borrower's good faith and ability to carry out the terms of the contract. This government realizes fully that condition and in order to encourage and facilitate that free intercourse between American citizens and foreign states which is mutually advantageous is willing to aid in every proper way and to make prompt and vigorous representations and to take every possible step to insure the execution of equitable contracts made in good faith by its citizens in foreign lands.

Your suggestion that the members of the proposed American group may be representative of the whole country is one which is entirely satisfactory since it removes a possible ground of objection. Various sections of the country are interested in enterprises of this character and undoubtedly would be glad to join any constructive movement such as is proposed. As so much depends upon the proper organization of the American financial group I assume that in the event of its formation you will submit the names of the proposed members to the government before a final organization is made.

The spirit of co-operation you manifest is very gratifying and you are assured of the interest of the government and of all proper aid which it can render in bringing this matter to a satisfactory conclusion.

I am, Gentlemen,

Your obedient servant,

ROBERT LANSING.

DEPARTMENT'S NOTE AND MEMORANDUM TO THE FRENCH, BRITISH, AND JAPANESE EMBASSIES, DATED OCTOBER 8th, 1918.

No. 2249

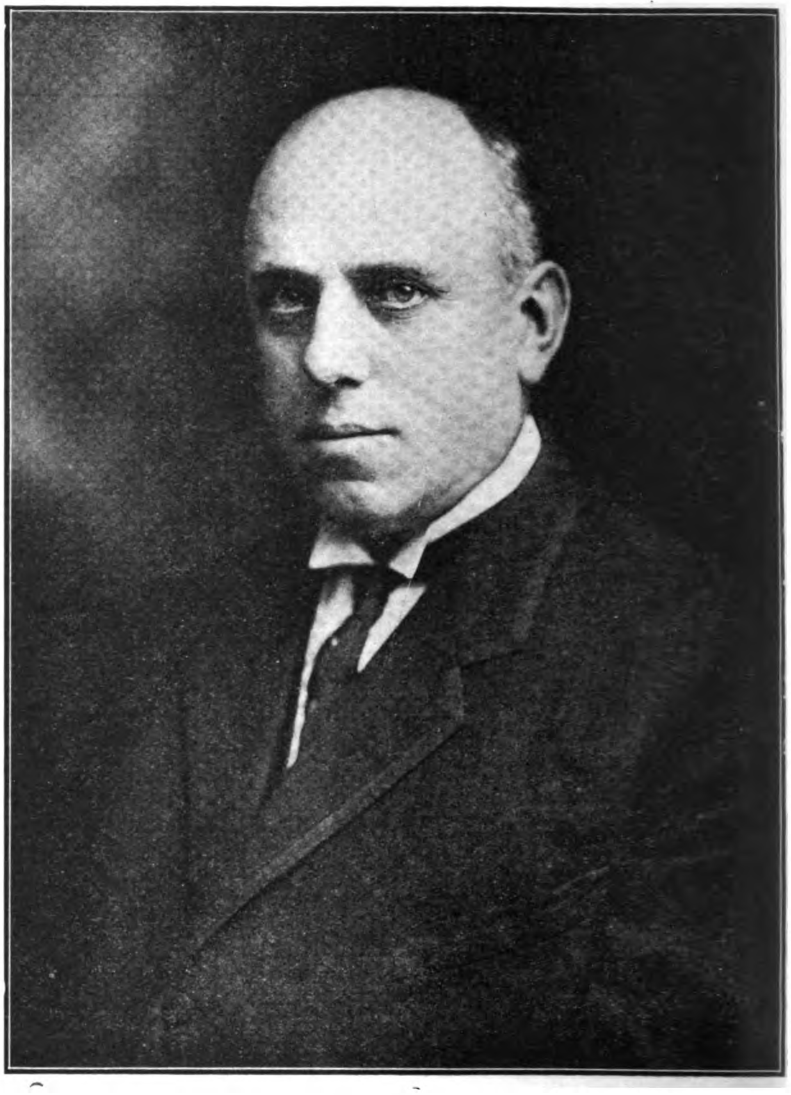
EXCELLENCY,—On July 10th, 1918, I had the honor to communicate to Your Excellency copies of confidential letters exchanged between certain American bankers and myself on the subject of the formation of an American group for the purpose of rendering financial assistance to China.

As appeared from the correspondence above referred to, it was the thought of this government that the newly formed American group should be representative of the whole country and should include in its membership such banks as had a present interest in China as well as such banks as might desire to join the group and were acceptable both to the other members of the group and to this government. Thirty-one banks have now joined the American group and are representatives of all sections of the country.

It was considered by all to be a reasonable condition of membership in the American group that all preferences and options for loans to China held by any member of this group should be shared by the American group as a whole, and that all future loans in

W. F. Carey

President of Siems-Carey Company, a subsidiary of the American International Corporation. One of the most successful American railway builders, he entered into a contract with the Chinese Government for the construction of 1,100 miles of new lines, which were all protested by the various Powers. His rights have been pooled in the Consortium



F. C. Hitchcock

Vice-President of the Siems-Carey Company and McArthur Brothers, one of the most experienced railway constructors and general engineering contractors in America

China which have any governmental guarantee should be conducted in common as group business, whether it was for administrative or for industrial purposes.

Such, in brief, were the principles underlying the formation of the American group so far as its own organization was concerned. It was the intention that all loans of the American group shall be automatically shared with and conducted in common by the international group when formed. It was frankly recognized that the war had created such a mutuality of interests between certain governments and peoples as to render their co-operation essential to any constructive program of financial assistance to China. It was, therefore, the earnest hope of the government of the United States that the other governments which were largely interested in China and in a position to render substantial assistance at this time,—namely, France, Great Britain and Japan—might see fit to join with this government in its proposed plan and consent to the formation of similar national groups organized on the same basis to co-operate with the American group; for its was and is the firm conviction of this government that only by such co-operation, and upon such principle, can the best results be obtained for China and for the common interests of the other powers concerned.

If each of the four governments should form a group of its own which should include all those who have made or would like to make loans to China, and if each member should share with the other members of its national group all future loans, including those to which it has a preference or on which it has an option, there could be little or no objection in the financial circles of the respective governments to such an arrangement.

Then if each of the four national groups should share with the other national groups any loans to China, including those to which that national group may have a preference or on which it may have an option, and all such business arising in the future, it is felt that the best interests of China would be served,—a purpose which the government of the United States has, in all sincerety, felt would have the cordial support of all the powers whihch have at heart the welfare of China.

The government of the United States, in making its proposal was of course not unaware of the so-called "Five Power Consortium." It was not the purpose, however, of this government in suggesting the formation of a new international group to interfere with any of the rights of that consortium. It was hoped that, as in the case of the American group, the new national groups to be formed might be made so broad as to include the members of the former consortium as well as others who had legitimate claims to such inclusion, so as to meet the larger needs and opportunities of China in a spirit of harmony and of helpfulness rather than of harmful competition and of self-interest.

The proposal as presented has given rise to various inquiries on the part of the several governments to which it was addressed and I have the honor to hand to Your Excellency herewith a memorandum covering the main points as raised. I should be happy if you would be so good as to convey the information therein contained

to your government and solicits favorable consideration and approval.

Accept, Excellency, the renewed assurances of my highest consideration.

Enclosure :

Memorandum.

893.51

MEMORANDUM.

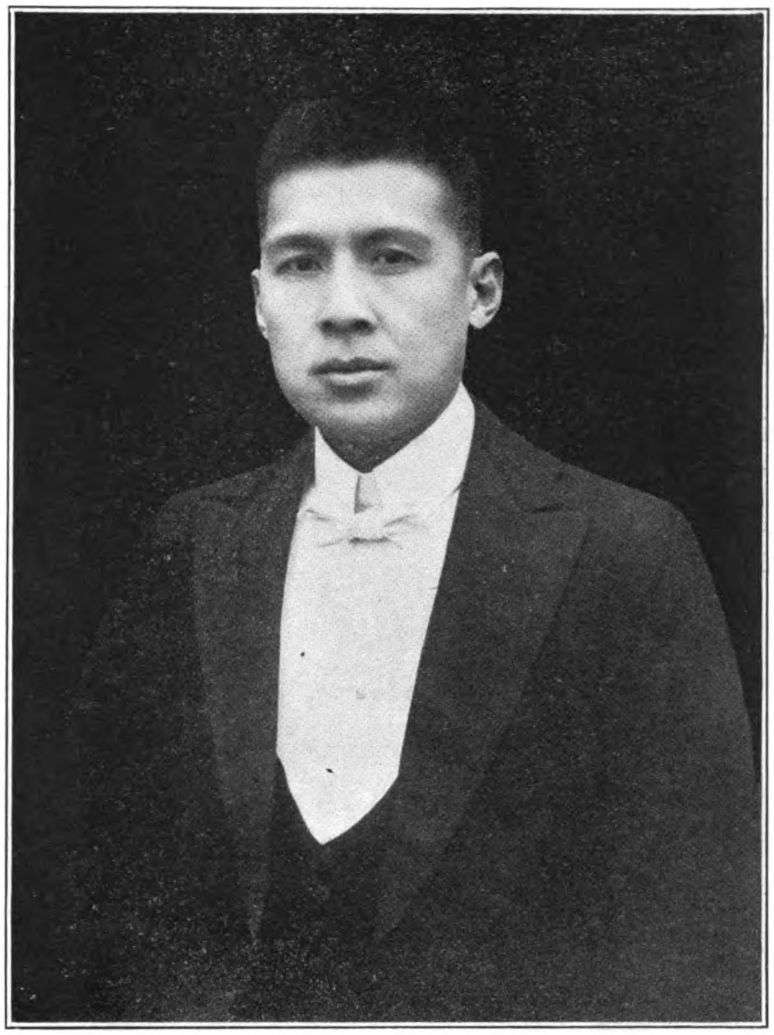
The government of the United States is gratified at the cordial reception given, in principle, to the general plan for loans to China as recently presented to the respective interested governments.

This government is now happy to reply, in the following sense, to the several requests of those governments for further information as to certain features of the proposed plan :

1. It is not intended that the American group, recently formed, should rejoin the existing consortium, but that there should be organized a new international group, consisting of representative financial institutions of the United States, Japan, Great Britain and France.

The plan, as proposed by the government of the United States, does not contemplate that the former consortium should necessarily be dissolved, but that each of the governments concerned should arrange for the formation of its own national group which it is hoped might be made so comprehensive as to include all those parties interested in the former consortium and such others, not so associated, who are engaged, or might engage, in loans to China, as well as any others whose participation might be desired.

Nor did the American government, in making its proposal, have any specific loan in mind, but was endeavoring to lay down some general rule for future activities which might, in a broad way, meet the financial needs and opportunities in China. It was for this reason that no specific reference was made to the amount of the loan or loans to be raised, the revenues to be pledged or to the precise objects of the proposed loan. It was contemplated that these questions would be determined in respect to each case as it might arise.



Pan Fu

China's Vice-Minister of Finance, whose rapid rise to power dates from his connection with the Siems-Carey Grand Canal Contract in Shantung. Through his investments in Shantung he is now one of China's millionaires. Pan Fu will rise to greater political heights in the future

Hsu Shih-chang

China's Vice-Minister of Communications, another young official whose rapid promotion is the reward of hard work and attention to duty. A worthy lieutenant to an able chief.

With respect to the second or supplementary reorganization loan for purposes of currency reform, this government is prepared to state in advance that it would be ready to recommend to the American group that it should not only take a part in that loan but be prepared to carry also, in conjunction with the Japanese group, the shares of the British and French groups, not only in this particular loan should it be included in the business of the new international group, but in such other loans as may develop while circumstances are such as to prevent their more active participation.

2. The reference to "a relinquishment by the members of the group either to China or to the group of any options to make loans which they now hold" applied primarily to the American group alone and to an agreement between the banks and the United States government, whereby all preferences and options for future loans in China having any governmental guarantee and held by the individual members of the American group should be relinquished to the group which should, in turn, share them with the international group. Such relinquishment of options was considered by this government to be a reasonable condition of membership in the American group ; and while it is recognized that such interested government must necessarily make its own arrangements with its own national group ; it is submitted that it is possible properly to conduct the business of the international group only by similar

General Chin Yun-peng

China's Premier and Minister of War. The Foreign Apologists of militarism in China refer to him as an "enlightened militarist," whatever that means. He is in fact one of the old hidebound Yuan Shih-kai military satraps, who, as the successor of Tuan Chi-jui, maintains the ascendency of the military party in Peking as opposed to Democracy or Parliamentary Government

relinquishment to the respective national groups by the individual banks forming those groups, without distinction as the nature of the options held.

3. The proposal of the government of the United States contemplated that industrial, as well as administrative loans should be included in the new arrangement for the reason that, in practice, the line of demarcation between these various classes of loans often is not easy to draw. Both alike are essential fields for legitimate financial enterprise and both alike should be removed from the sphere of unsound speculation and of destructive competition. The intention of this government was to suggest, as a means to that end, that the interested governments should, by common consent, endeavor so to broaden the membership in the newly formed national groups that all financial firms of good standing interested in such loans might be included in the respective groups, and should withhold their support from independent financial operations without previous agreement of the interested governments.

As regards the inter-group conference held in Paris, September 26th, 1913, and the agreement to which the American group adhered, stating that they had no objection to the elimination of industrial loans, it can only be said that the American group prior to that had withdrawn from active participation in the consortium and was, therefore, not in a position to object; but that it is now felt that with the establishment of a new group, the question may properly be reconsidered.

4. The expression "any terms or conditions of a loan which sought to impair the political control of China or lessen the sovereign rights of that republic" had reference only to the future activities of the American group and was not intended to call in question the propriety of any specific arrangement in operation between the former consortium and the Chinese government, or between any other government and the Chinese. It can be definitely stated that the United States government did not mean to imply that foreign control of the collection of revenues or other specific security pledged by mutual consent would necessarily be objectionable, nor would the appointment uncdr the terms of some specific loan of a foreign adviser,—as, for instance, to supervise the introduction of currency reform.

6. With respect to the Russian and Belgian groups and their rights in the former consortium, no present action is contemplated either by way of reservation as to the old or of participation in the new group. As previously stated, it is not anticipated that the existing consortium will necessarliy be dissolved nor, on the other hand, do present conditions warrant the expectation that effective Russian and Belgian national groups could readily be formed at this time.

It is not the intention, however, of this government to ignore, much less to exclude, any just claim of participation in the new international group, but merely, for practical considerations arising out of the war, to associate the interests of the governments now so closely and actively associated and most able to finance the proposed loans to China, and to reserve for future consideration the

General Tsao Kun

Styled by his admirers as a "Straightforward General." Rising from the ranks, he became one of Yuan Shih-kai's trusted commanders. His troops surround Peking, and with Chang Tso-ling, the "War Lord" of Manchuria, he dictates the working of the government

Liang Shih-yi

Undoubtedly, China's most able financier. The right hand man of Yuan Shih-kai, he on many occasions raised the "wind" to keep the Government going. He knows more about China's railway problems and intrigues than any living man. Liang's memoirs would shed light on many mysteries

RESOLUTIONS ADOPTED BY THE BANKERS' CONFERENCE AT PARIS, MAY 10th TO MAY 12th, 1919.

First. It was resolved that the principles laid down for the formation of the new consortium for Chinese loan business in the note dated blank, 1918, by the American government, addressed to the British, French and Japanese governments, and the subsequent memorandum relating thereto, be, and the same are, hereby approved.

Second. It was resolved: (*a*) That in addition to future business all existing loan agreements and options which involve the issue for subscription by the public of loans, be pooled with the exception of agreements and options relating to industrial undertakings (including railways) upon which substantial progress has been made; (*b*) that the groups will surrender to the consortium any such agreements and options which they themselves possess or control; (*c*) that the groups will use their best endeavors to induce other parties who may possess or control any such agreements or options to surrender the same to the consortium.

Third. It was declared that the groups would be prepared to consider the inclusion of the Russian group in the new consor- inclusion of any other groups of friendly powers which may, at a later time, be in a position effectively to co-operate.

DEPARTMENT'S NOTE OF MAY 31st, 1919, TO THE FRENCH, BRITISH, AND JAPANESE EMBASSIES.

Sir,—Referring to Mr. Lansing's note of October 8th, 1918, I have the honor to inform you that at a meeting of representatives of the banking groups of Great Britain, France, Japan and the United States, held at Paris on May 12th, 1919, with the sanction of their respective governments, for the purpose of organizing an international group for financial business in China, the enclosed resolutions were unanimously adopted, subject to confirmation by the governments concerned.

The government of the United States, on its part, accepts and confirms the above resolutions and it is hoped that His Britannic Majesty's government will promptly gives like confirmation in order that the formal organization of the new consortium may be completed, prior to the expiration of the old consortium agreement on June 18th, next.

Accept, Sir, the renewed assurances of my high consideration.

BRECKINRIDGE LONG,
Acting Secretary of State.

Enclosure:
Resolutions.
893.51/

Hsu Un-yuan

One of China's leading financiers, formerly Governor of the Bank of China, now Vice-President of the Chinese-American Bank which he organized in 1920

Feng Kun-kwang

President of the Bank of China

tium as soon as a government recognized as such by the respective governments of the groups should be established in Russia. The Chairman was requested to communicate a copy of this resolution to the Russian group.

Fourth. Mr. Simon having reported that a Belgian group had requested that they be included in the new consortium as a principal, it was resolved that favorable consideration should be given to this request after the formation of the new consortium. Mr. Simon was requested to communicate a copy of this resolution to the Belgian group.

Fifth. It was resolved that each group in the new consortium shall be a national unit and that no member of any group shall, within the scope of the operation of the consortium, represent directly or indirectly any other national interest. That each group shall be established by a formal agreement in writing. That each of these agreements shall be furnished to the other groups.

Sixth. It was recognized in principle that industrial undertakings and railways in particular should be handled as an undivided whole and not sectionally and it was resolved that instructions be given by the groups to their respective representatives and engineers to prepare a joint scheme for carrying this principle into effect.

Seventh. The question of the participation of the Japanese group in the Hu Kuang railway loan having been raised, the other groups stated that it was their intention, so soon as the new consortium was formed and the Japanese group included therein, to offer them an equal share with the other groups in this loan upon the terms of the last mentioned resolution.

Eighth. The draft of the agreement was read and approved and it was resolved that the same should be remitted for the further consideration of the groups in consultation with their respective governments.

AN AGREEMENT MADE THE .... day of ....1919 between the HONGKONG AND SHANGHAI BANKING CORPORATION having its office at 9 Gracechurch Street in the City of London (hereinafter called "the Hongkong Bank") of the first part THE BANQUE DE L'INDO-CHINE having its office at 15bis Rue Lafitte, Paris (hereinafter called "the French Bank") of the second part THE YOKOHAMA SPECIE BANK, LIMITED having its office at Yokohama in Japan (hereinafter called "the Japanese Bank") of the third part and Messrs. J. P. MORGAN & CO., Messrs. KUHN LOEB & CO., THE NATIONAL CITY BANK OF NEW YORK, THE GUARANTY TRUST COMPANY of New York and the CONTINENTAL AND COMMERCIAL TRUST AND SAVINGS BANK of Chicago (hereinafter called "the American Managers") acting as to the United Kingdom by Messrs. Morgan Grenfell & Co., of 22 Old Broad Street in the city of London and as to France by Messes. Morgan Marjes & Co., of Paris of the fourth part. WHEREAS the Hongkong Bank the French Bank the Japanese Bank and the American Managers are acting for the purposes of this agreement as the representatives of the British French Japanese and American groups respectively AND WHEREAS the British French Japanese and American groups were formed with the object of negotiating and carrying out Chinese loan business and are entitled to the exclusive diplomatic support of their respective governments NOW IT IS HEREBY AGREED by and between the parties hereto as follows:

1. Each group reserves to itself the right of increasing or reducing the number of its own members but so that any member of a group dropping out shall remain bound by the restrictive provisions hereof and any member of a group coming in shall become subject to the restrictive provisions hereof and so that no group shall (without the consent of the others) be entitled to admit into its group a new member who is not of its nationality and domiciled in its market. The admission of any new group

Sze Sao-tseng

Director General of the Lung-hai Railway, who signed the recent Belgian-Holland Loan Agreement to complete the Eastern section of this trunk line. His brother, Alfred Sze, is now China's Representative at Washington

C. C. Wang

One of China's Foremost Railway Experts and Administrators, now acting as China's Representative on the Board of the Chinese Eastern Railway

shall be determined by the parties hereto subject to the approval of their respective governments.

2. This agreement relates to existing and future loan agreements which involve the issue for subscription by the public of loans to the Chinese government or to Chinese government departments or to provinces of China or to companies having Chinese government or Chinese provisional government guarantees but does not relate to agreements for loans to be floated in China. Existing agreements relating to industrial undertakings upon which it can be shown that substantial progress has been made may be omitted from the scope of this agreement.

3. The existing agreements and any future loan agreements to which this agreement relates and any business arising out of such agreements respectively shall be dealt with by the said groups in accordance with the provisions of this agreement.

4. This agreement is made on the principle of complete equality in every respect between the parties hereto and each of the parties hereto shall take an equal share in all operations and sign all contracts and shall bear an equal share of all charges in connection with any business (except stamp duties and any charges of and in connection with the realization by the parties hereto in their respective markets of their shares in the operations) and the parties hereto shall conclude all contracts with equal rights and obligations as between themselves and each party shall have the same rights priveleges prerogatives advantages responsibilities and obligations of every sort and kind. Accordingly preliminary advances on account of or in connection with business to which this agreement relates shall be borne by each of the parties hereto in equal shares and each of the parties hereto shall be entitled to participate equally in the existing agreements and will offer to the other parties hereto an equal participation with itself in any future loan business falling within the scope of this agreement. Should one or more of the parties hereto decline a participation in the existing agreements or any of them or in any such future loan business as aforesaid the party or parties accepting a participation therein shall be free to undertake the same but shall issue on its or their markets only.

5. All contracts shall so far as possible be made so as not to impose joint liability on the parties hereto but each of the parties hereto shall severally liquidate its own engagements or liabilities. The parties hereto will so far as possible come to an understanding with regard to the realization of the operations but so that such realization in whatever manner this may take place shall be for the separate benefit of each of the parties hereto as regards their respective participants therein and so that each of the parties hereto shall be entitled to realize its participation in the operations only in its own market it being understood that the issues in the respective markets are to be made at substantial parity.

6. Any one or more of the parties hereto who shall have accepted its or their participation in any business hereunder shall be entitled by notice on writing to call upon the other or others of the parties hereto to issue their own respective participations to issue for the account of the party or parties giving such notice or notices either all or one-half of the amount which may constitute the participation of the party or parties giving such notice or notices and the party or parties so called upon shall issue the said amount or amounts (hereinafter called "the Residuary Participation") specified in such notice or notices upon and subject to the terms and conditions following, viz.:—

(1) Such notice or notices must be received by the other or others of the parties hereto before the execution of the final agreement for the issue of the loan or (in the case of an issue of a part only of the loan) of so much thereof as the parties hereto may from time to time agree to issue.

(2) The party or parties to whom such notice or notices shall have been given shall be entitled to decide among themselves and without reference to the party or parties giving such notice or notices as to which one or more of them shall issue the residuary participation but in default of any such decision they shall issue the same equally between them.

(3) In issuing the residuary participation no distinction shall be made between the residuary participation and the amount or amounts issued on its or their own account by the party or parties issuing the residuary participation which shall in all respects be subject to the condition of the respective syndicates which may be formed for the purpose of effecting the issue.

Hsiung Hsi-ling

Ex-Premier and Minister of Finance. One of China's Foremost Financial Authorities

(4) Each of the parties issuing the residuary participation shall be entitled to decide for itself and without reference to the party or parties giving such notice or notices as to what expenses shall be incurred in relation to the issue of the total amount issued by such party.

(5) The party or parties issuing the residuary participation shall be entitled between them to charge the party or parties giving such notice or notices with a commission of not exceeding $1\frac{1}{2}$ per cent. on the nominal amount of the residuary participation and also with a pro rata share of the total expenses which the issuing party or parties may in their sole discretion incur in relation to the whole issue and being in the proportion which the residuary participation bears to the total nominal amount of the issue.

(6) The party or parties issuing the residuary participation shall not by virtue of this agreement incur any responsibility to subscribe for the residuary participation or to cause the same to be subscribed.

(7) Each party issuing the residuary participation shall apply all subscriptions received by it pro rata between the residuary participation issued by it and the amount issued by such party on its own account.

(8) Each of the parties issuing the residuary participation will apply for and use its best endeavors to obtain a quotation on its market for the total amount issued by it.

(9) No issue of the residuary participation or any part thereof shall be made by the party or parties giving such notice or notices unless mutually agreed by the parties hereto.

7. No participation shall be given by any one of the parties hereto outside its own market. Any participation given in its own market by any one of the parties hereto shall be for its own account only or in event of the issue including any of the residuary participation for the accounts pro rata of the issuing bank and the party or parties giving such notice or notices as aforesaid and in giving such notice or notices as aforesaid and in giving such participation the party giving the same shall use its best endeavors to secure that no part of such participation shall be transferred to parties outside the market of the party giving the same. Any other participation shall be given only with the consent of all parties hereto and shall be borne in equal shares by the parties hereto.

8. This agreement shall remain in force for the period of 5 years from the date hereof. Provided nevertheless that a majority of the parties hereto may by 12 months previous notice in writing addressed to the other parties hereto determine this agreement at any time.

In Witness whereof the duly authorized representatives of the respective parties hereto have set their hands the day and year first above written.

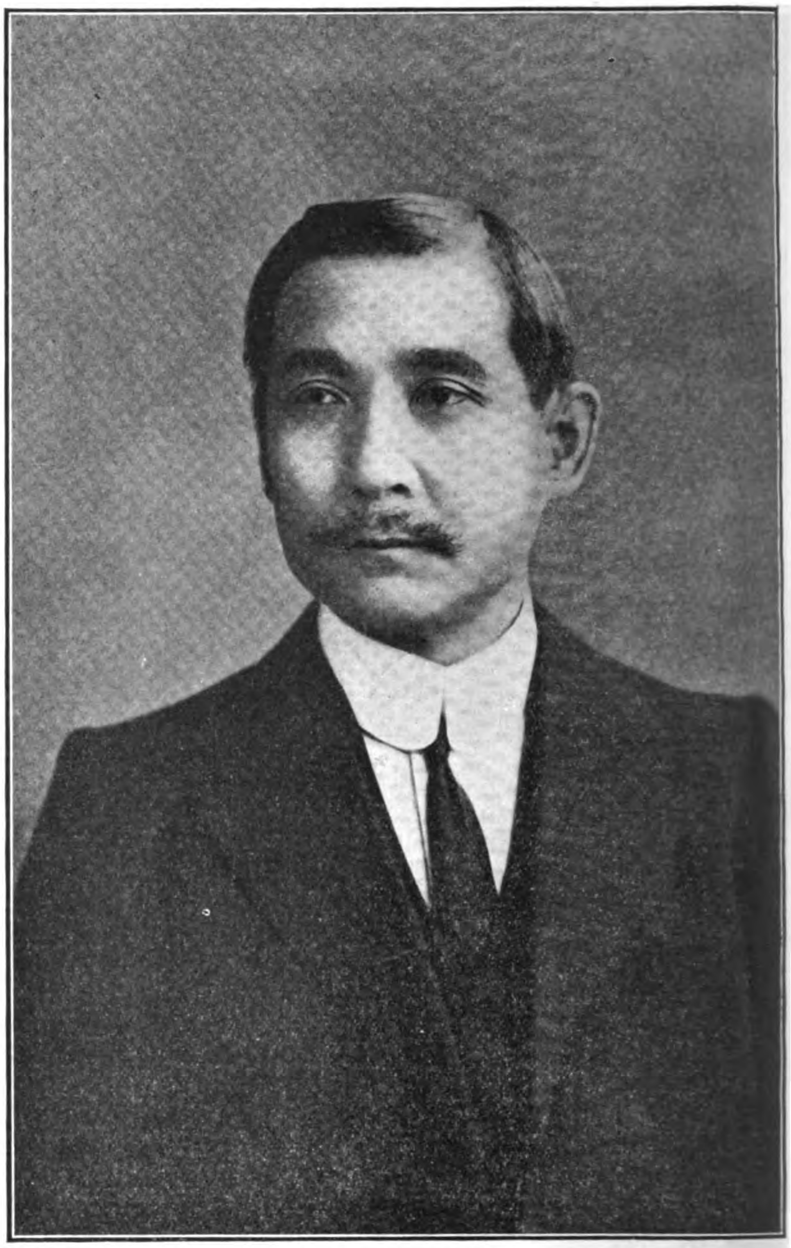
LETTER FROM MR. M. ODAGIRI TO MR. T. W. LAMONT, DATED JUNE 18th, 1919.

T. W. Lamont, Esq.,
Messrs. Morgan, Grenfell & Co.,
22 Old Broad Street, E.C.2.

Dear Sir,—With refeience to our interview in Paris, and Mr. Tatsumi's conversation with you on the 16th instant in connection with the proposed new consortium for Chinese business, for your information I would wish to communicate to you that we have been instructed by our principals in Japan that all the rights and options held by Japan in the regions of Manchuria and Mongolia, where Japan has special interests, should be excluded from the arrangements for pooling provided for in the proposed agreement. This is based on the very special relations which Japan enjoys geographically, and historically, with the regions referred to, and which have been recognized by Great Britain, the United States, France and Russia on many occasions. In this connection I would wish to specially draw your attention to a note from the secretary of state to the Japanese ambassador, dated Washington, November 2nd, 1917.

Furthermore the following matter which was dealt with under the present group agreement, was reserved by the Japanese group at the time of signature of the Chinese reorganization loan agreement.

On the 18th June, 1912, at a meeting of the six groups held in Paris, when discussing the agreement for the Chinese



Dr. Sun Yat-sen

An Honest Man, a Chinese Patriot. He Represents the Type that Must Lead China Forward to Her Place Amongst the Nations. Somewhat of an Idealist with Socialist Tendencies, He Stands for the Great Principle of Democracy or Parliamentary Government, as Opposed to the Grafting Rule of the Military Satraps, who Stole from Him the Fruits of His Work in the First Revolution. His great work for the Nationalization of China's Railways, was Destroyed by President Wilson in 1913, through withdrawing support from the American Group, at a time when his scheme was ready to be financed. He has recently been elected President of China by the Southern parliament at Canton. One of the anomolies of the Far Eastern situation lies in the fact that the Democratic Governments who fought Germany to abolish militarism, stubbornly uphold the worst type of predatory militarism in China, while opposing recognition to the leader of Chinese Democracy. The Success of the Consortium will depend largely upon the establishment of internal peace in China. In any compromise or coalition between Militarism and Democracy, Dr. Sun will become an important factor in working out the Plans ot the Consortium

reorganization loan about to be issued, the following declaration was made by Mr. Takeuchi on behalf of the Japanese group and was recorded in the minutes of the Conference:—

"The Japanese bank declared that it takes part in the loan on the understanding that nothing connected with the projected loan should operate to the prejudice of the special rights and interests of Japan in the regions of South Manchuria and of the eastern portion of Inner Mongolia adjacent to South Manchuria."

I should be very much obliged if you would give the foregoing matter your careful consideration and with may best thanks in advance,

I remain,

Yours faithfully,

(Sd.) M. ODAGIRI.

LETTER FROM MR. THOMAS W. LAMONT TO MR. M. ODAGIRI, DATED JUNE 23rd, 1919.

COPY

Mr. M. ODAGIRI,

Hotel St. James et d'Albany,

211 rue St. Honare,

Paris.

DEAR SIR,—I have before me your letter of June 18th, delivered to me at London and communicating to me for the information of the American group the instructions which you have received from Tokio as to "the rights and options held by Japan in the regions of Manchuria and Mongolia where Japan has special interests." You have, as I understand it, sent a letter in a similar sense to Sir Charles Addis, of the Hongkong and Shanghai Banking Corporation for the British group, and M. Simon, of the Banque de l'Indo-Chine, for the French group.

For your information I beg to state that I have conferred informally with both the British and French groups, and our views of the matter that you bring up are in accord. We cannot but believe that there is some misunderstanding upon the part of your principals in the matter, for if they were to make such an attitude final, the effect upon the relation of Japan to the new consortium would be obvious. Mongolia and Manchuria are important parts of China, and any attempt to exclude them from the scope of the consortium must be inadmissible. The "special interests" to which you allude have, in our opinion, never had to do with economic matters.

The whole question that you bring us is one of such grave import that we feel that it is beyond the immediate competence of the financial groups to discuss, and I am therefore bringing the matter to the attention of the department of state at Washington. I presume that the other groups will take similar action with respect to their own foreign offices.

We have noted your reference to the declaration made by Mr. Takeuchi on behalf of the Japanese banking group and recorded in the minutes of the conference on June 18th, 1912, at meeting of the six banking groups held in Paris on that date. For your information I beg to recall to you that at the same time there was recorded in the minutes of the conference the following declaration: "The British, German, French and American groups stated that they were unable to accept or consider either of these declarations upon the ground that they were not competent to deal with political questions." This declaration was accepted in conformity with the statement made by the Japanese ambassador to Mr. Addis in London on June 11th, 1912.

I remain,

Yours very truly,

(Sd) THOMAS W. LAMONT.

DEPARTMENT'S NOTE OF JULY 3rd, TO FRENCH, JAPANESE AND BRITISH EMBASSIES, SETTING FORTH DEGREE OF DIPLOMATIC SUPPORT TO BE ACCORDED THE CONSORTIUM.

SIR,—Referring to previous correspondence regarding the organization of a new international consortium for financial business in China I have the honor to inform you that I have instructed the American embassies at Paris and London to inform the French and British governments that the department will accept as an interpretation of the bankers' agreement of may 12th the following slightly modified form of the formula submitted by the French government:

"The governments of each of the four participating groups undertake to give their complete support to their respective national groups members of the consortium in all operations undertaken pursuant to the resolutions and agreements of the 11th and 12th of May, 1919, respectively, entered into by the bankers at Paris. In the event of competition in the obtaining of any specific loan contract the collective support of the diplomatic representatives in Peking of the four governments will be assured to the consortium for the purpose of obtaining such contract."

You will note that the principal change is in pledging each government to the support of its respective national group rather than to the consortium collectively. This proposed change makes the formual more in accord with the actual facts and with the established practice of this government.

The American ambassador at Tokyo is being instructed to communicate the above to the Japanese foreign office.

Accept, Sir, the renewed assurances of my high consideration.

WILLIAM PHILLIPS,

Acting Secretary of State.

893.51/2292

MEMORANDUM OF THE DEPARTMENT OF STATE TO THE JAPANESE EMBASSY, JULY 30th, 1919.

MEMORANDUM.

The government of the United States is informed that, at the bankers conference held in Paris during May and June last to discuss matters relating to the new consortium for China, the Japanese financial delegates, acting under instructions from their principals, asserted that "all the rights and options held by Japan in the regions of Manchuria and Mongolia where Japan has special interests should be excluded from the arrangements for pooling provided for in the proposed agreement," because of "the very special relations which Japan enjoys geographically and historically with the regions referred to and which have been recognized by Great Britain, the United States, France and Russia on many occasions."

The government of the United States is further informed that the position taken by the representative of the American group, with the approval of the British and French financial representatives, was that, so far as the banking groups were concerned, any attempt to exclude Mongolia and Manchuria from the scope of the consortium would be inadmissible; but that the whole question raised was one of such grave importance that it was felt to be beyond the immediate competence of the financial groups to discuss, and that he would, therefore, bring the matter to the attention of his government.

The Imperial Japanese government has not indicated that it shares the opinion expressed by the Japanese bankers; but inasmuch as the question raised by the latter has been referred

to this government by the American representative, it is felt to be appropriate to bring the latter to the notice of the Imperial government.

It may be that the Japanese banking group is under a misapprehension as to the objects and purposes of the consortium, which are to make loans to the central government of China, or to the provincial governments, for administrative or industrial purposes and to include all such loans as have the guarantee of the central government or any of the provincial governments and which involve a public issue. They do not, however, contemplate the elimination of private enterprise or the activities of financial or industrial corporations, nor would it be the desire of this government that they do so.

The Imperial Japanese government will readily understand that the government of the United States could not consistently consent that the American bankers agree to the reservation proposed, for the reason that it is believed to be an essential prerequisite to the proper functioning of the consortium that all Chinese business of the classes proposed as appropriate for the activity of the consortium be available for it. Reservations of regions can only impair its usefulness as an instrument for good, and limitations on its activity can only detract from its utility as a means for promoting international co-operation among those most interested in China. Moreover, as all other parties to the arrangement have agreed to pool their rights and options without other reservation than that contained in the terms of the agreement itself, it is only equitable that the same rule should apply to all alike.

If the government of Japan is unable to convince the Japanese bankers of the justness of adhering, without reservation, to the agreement as accepted by the bankers representing the groups of the United States, Great Britain and France, the government of the United States will receive the information with keen disappointment and sincere regret: for it is felt that the relations established during the great war between these and other nations have laid a basis upon which the work of peace might be erected by cordial co-operation and to their mutual advantage. The government of the United States believes that the consortium is one of those mediums for constructive work: through which the helpful spirit of the relations which were so cemented during the war may be translated into co-operative action. That this view is not held alone by the government of the United States is evidenced by the desire on the part of the British and the French governments to co-operate in the consortium and by the requests for representation therein from the government of Belgium, and from the bank of Russia, both of which are now under consideration. It is, therefore, the confident hope of this government that the Imperial Japanese government will also share this view, and will so inform the Japanese banking group.

ROBERT LANSING.

Department of State,
Washington, July 30th, 1919.

MEMORANDUM.

On the 22nd of last month Earl Curzon of Kedleston had the honor to address to the Japanese ambassador a note on the subject of the British participation in the international consortium for providing loans to China. This note will have made it clear to Viscount Chinda that with the exception of the condition concerning exclusive official support to the British group—a point which has been satisfactorily settled by the adoption of the American formula defining the measures of support to be accorded by the governments concerned to their respective natonal groups,—His Majesty's government have accepted in their entirety the original proposals of the American government for the formation of the international consortium as set out in a note addressed by Lord Curzon to the Japanese chargé d'affaires on March 22nd last This scheme, as Viscount Chinda is doubtless aware, comprises the pooling by the groups of all their existing and future options in China, except such concessions as may already be in operation.

His Excellency has probably also had occasion to study the minutes of the inter-group meetings held in Paris on the 11th and 12th of May last, at which resolutions were unanimously adopted, subject of course to the approval of the governments concerned, providing for the pooling by the groups of all their existing loans agreements and options involving a public issue and even pledging the groups to use their best endeavors to induce other parties who may possess or control any such agreements or options to surrender the same to the consortium.

At the present moment the British, American, and French governments have all informed their respective groups of their approval of these minutes, subject always to the American definition of the measure of official support to be accorded to them, but so far as Lord Curzon is aware no such approval has as yet been intimated by the Japanese government, with the result that the urgent work of organizing the consortium has been brought to a standstill.

His Majesty's government have heard, with the utmost regret that the Japanese financial delegates in Paris, acting under instructions from their principals, have informed their colleagues that all the rights and options held by Japan in the regions of Manchuria and Mongolia, where Japan has special interests, should be excluded from the arrangements for pooling provided for in the proposed agreement because of the very special relations which Japan enjoys geographically and historically with the regions referred to and which have been recognized by Great Britain, the United States, France and Russia on many occasions.

His Majesty's government are further informed that the position taken by the British, American and French groups towards this claim of the Japanese group was that any attempt to exclude Manchuria and Mongolia from the scope of the consortium would be inadmissible, but that the whole question raised was one of such grave importance that it was felt to be beyond the immediate competence of the groups to discuss and must therefore be referred to the decision of the governments.

In these circumstances His Majesty's government feel justified in bringing the matter to the notice of the Japanese government,—as they hear has already been done by the American government,—and requesting them to direct the Japanese groups to modify their attitude on this all-important point.

One of the fundamental objects of the American proposals as accepted by the British, Japanese and French governments, is to eliminate special claims in particular spheres of interest and to throw open the whole of China without reserve to the combined activities of an international consortium. This object cannot be achieved unless all the parties to the scheme agree to sacrifice all claim to enjoy any industrial preference within the boundaries of any political sphere of influence. Manchuria and Mongolia are important provinces of China and any attempt to exclude them from the scope of the consortium would constitute a direct negation of the principle on which the consortium is based, would provoke the revival of similar claims on the part of other nations and thus perpetuate the very difficulties which the consortium is designed to obviate. Moreover as all other parties to the arrangement, except the Japanese group, have agreed to pool their rights and options without other reservation than that contained in the terms of the agreement itself, it is only equitable that the same rule should apply to all alike.

His Majesty's government have every reason to believe that the Japanese government will share these views and will cause the Japanese group to withdraw their claim to the exclusion of Manchuria and Mongolia from the scope of the consortium.

Foreign Office, S.W.I.
August 11th, 1919.

IMPERIAL JAPANESE EMBASSY, WASHINGTON.

The Japanese government accept and confirm the resolution adopted at the meeting of the representatives of the bankers groups of the United States, Great Britain, France and Japan at Paris on May 11th and 12th, 1919, for the purpose of organizing an international consortium for financial business in China: Provided, however, that the acceptance and confirmation of the said resolution shall not be held or construed to operate to the prejudice of the special rights and interests possessed by Japan in South Manchuria and Eastern Inner Mongolia.

K. DEBUCHI.

August 27th, 1919.

DEPARTMENT'S REPLY DATED OCTOBER 28th, 1919, TO THE MEMORANDUM OF THE JAPANESE EMBASSY, DATED AUGUST 27th.

MEMORANDUM.

The government of the United States has received and carefully considered the memorandum dated August 27th, 1919 in which the Imperial Japanese embassy advised it that the Japanese government accepted and confirmed the resolution adopted at the meeting of the representatives of the bankers groups of the United States, Great Britain, France and Japan at Paris on May 11th and 12th, 1919, for the purpose of organizing an international consortium for financial business in China, subject, however, to the following proviso:

> "that the acceptance and confirmation of the said resolution shall not be held or construed to operate to the prejudice of the special rights and interests possessed by Japan in South Manchuria and Eastern Inner Mongolia."

This government, after an earnest study of the proposal thus made, reluctantly finds itself unable to assent to the proviso in reference to South Manchuria and Eastern Inner Mongolia: it can only regard the reservation in the form proposed as an intermixture of exclusive political pretensions in a project which all the other interested governments and groups have treated in a liberal and self-denying spirit and with the purpose of eliminating so far as possible such disturbing and complicating political motives; and it considers that from the viewpoint, either of the legitimate national feeling of China or of the interests of the powers in China it would be a calamity if the adoption of the consortium were to carry with it the recognition of a doctrine of spheres of interest more advanced and far-reaching than was ever applied to Chinese territory even in the period when the break-up of the empire appeared imminent.

It can only be assumed that in taking its present position the Japanese government has misapprehended the purposes of the consortium and assumed that it is the intention of the other governments to encroach upon the existing vested Japanese interests in the region indicated. That such is not the intention may be seen from the wording of the inter-group agreement of May 11th which in Article I specifies that only those industrial undertakings are to be pooled upon which substantial progress has not been made. This wording plainly excludes those enterprises which are already developed and thus constitute vested proprietary interests (such as the South Manchuria and Ssupingkai-Chengchiatun Railways, the Fushun collieries, et cetera) and may fairly be interpreted to exclude likewise the existing options for the extension of railways already in operation (for instance the proposed continuation to Taonan of the Ssupingkai-Chengchiatun Railway and to Hueining (Hoiryong) of the Kirin-Changchun Railway). If Japan's reservation is urged with a view solely to the protection of existing rights and interests, it would seem that all legitimate interests would be conserved if only it were made indisputably clear that there is no intention on the part of the consortium to encroach on established industrial enterprises or to expect the pooling of existing Japanese options for the continuation thereof: and this government feels that the Japanese government should be amply content with the understanding that certain specific enterprises are exempt. This government cannot accept a geographical reservation which could not but lend itself to implications which are foreign to the purposes of the consortium. But it is still hopeful that the Japanese government may find it possible to authorize its banking group to enter the proposed consortium with full assurance that no legitimate Japanese rights or interests would thereby be jeopardized.

ROBERT LANSING.

893.51/2405

Department of State,

Washington, October 28th, 1919.

MEMORANDUM HANDED TO THE JAPANESE AMBASSADOR BY EARL CURZON.

On the 1st September his Excellency the Japanese ambassador communicated to Earl Curzon of Kedleston the following memorandum:—

"The Japanese government accept and confirm the resolutions adopted at the meeting of the representatives of the bankers' groups of the United States, Great Britain, France and Japan at Paris on the 11th and 12th May, 1919, for the purpose of organizing an international consortium for financial business in China, provided, however, that the acceptance and confirmation of the said resolutions shall not be held or construed to operate to the prejudice of the special rights and interests possessed by Japan in South Manchuria and Eastern Inner Mongolia."

At a subsequent interview with Lord Curzon Viscount Chinda, in accordance with instructions received from his government, defined what was meant by South Manchuria and Eastern Inner Mongolia.

His Majesty's government have now, after the most careful consideration of the Japanese contention, been forced to the conclusion that they could not justifiably accept the claim for the exclusion of Southern Manchuria and Eastern Inner Mongolia from the sphere of activity of the consortium if it were intended as a territorial claim.

As was pointed out to the Japanese ambassador in the memorandum communicated to his Excellency on the 11th August, the admission of such a claim to a monopoly of commercial interests in a large geographical area of China would be a direct infringement of the fundamental idea underlying the creation of the consortium, which was to abolish spheres of interest and throw open the whole of China to the activities of an international financial combination.

Lord Curzon, however, cannot help thinking that the Japanese government must be laboring under a misapprehension as to the scope and purpose of the consortium. It is not and never has been intended that under the guise of the consortium vested interests should be encroached upon. Article I of the inter-group agreement of the 11th May last specifically lays down that agreements and options relating to industrial undertakings (including railways), upon which substantial progress has been made, need not be pooled. Indeed, the sphere of the new consortium is definitely limited to the financing of future undertakings in China, and was never meant to extend to established industrial enterprises.

So far as Southern Manchuria is concerned, Lord Curzon, recognizes that there are in that province important railways and other industrial enterprises which have been developed or are in course of development by Japanese enterprise and which are clearly not within the sphere of the consortium. Such is not, however, the case in Eastern Inner Mongolia, where, although options for railways have been granted to Japan, no work has yet been begun. Indeed, such a claim as is put forward by the Japanese government in regard to Eastern Inner Mongolia, amounting to the reservation of an exclusive interests in a large area whose southern boundaries practically envelop Peking and encroach upon the

province of Chihli, cannot be reconciled with the maintenance of the independence and territorial integrity of China which Japan has so often pledged herself to observe.

It is confidently hoped, therefore, that when the question is viewed in this light, the Japanese government wil lsee no objection to modify their present attitude as regards both South Manchuria and Inner Mongolia and will authorize the Japaneze banking group to enter into the new consortium on the same basis as the other groups, that is, without any special reservations.

The Japanese government will also, no doubt, recognize the urgent need of promptitude in dealing with the situation, in view of the disastrous situation on the verge of which China appears now to find herself.

Foreign Office, November 20th, 1919.

IMPERIAL JAPANESE EMBASSY, WASHINGTON.

MEMORANDUM.

The Japanese government have given their serious consideration to the memorandum of the United States government of the 28th of October last relating to the formation of a new consortium.

The United States government appears to be under the impression that the proposal of the Japanese government in regard to South Manchuria and Eastern Inner Mongolia amounts either to exclusive political pretentions or to the establishement of a so-called sphere of interest.

The Japanese government desire to set forth once again their views frankly on the main purpose of their proposal and to invite further consideration on the part of the United States government on this subject.

From the nature of the case, the regions of South Manchuria and Eastern Inner Mongolia which are contiguous to Korea stand in very close and special relation to Japan's national defense and her economic existence. Enterprises launched forth in these regions, therefore, often involve questions vital to the safety of the country. This is why Japan has special interest in these regions and has established there special rights of various kinds.

The Japanese government are under no misapprehension or misgiving as to the purpose of the organization of the consortium, and are glad to co-operate under such an arrangement with the powers concerned for the promotion of the general welfare in China. But, as is suggested in the proposed consortium, merely out of business considerations, to throw open to the common activities of an international financial combination, even those enterprises in the regions of South Manchuria and Eastern Inner Mongolia which vitally affect the economic existence and national defense of Japan, would be no safe way of providing for the national peace and security, and for this reason, it would hardly meet with the approval of public opinion in Japan. These considerations were fully set forth by Mr. Debuchi, the then chargé d'affaires of Japan, in his interview with the third assistant secretary on the 27th of August last year.

Furthermore, the recent development of the Russian situation, exercising as it does an unwholesome influence upon the Far East, is a matter of grave concern to Japan. In fact, the conditions in Siberia, which have been developing with alarming precipitancy of late, are by no means far from giving rise to the most serious situation, which may at any time take a turn threatening the safety of Japan and the peace of the Far East, and ultimately place entire Eastern Asia at the mercy of the sinister activities of extremist forces. Having regard to these signals of the imminent character of the situation, the Japanese government all the more keenly feel the need of adopting measures calculated to avert any such danger in the interest of the Far East as well as of Japan. Now South Manchuria and Mongolia are the gate by which these direful influences may effect their penetration into Japan and the Far East to the instant menace of their security.

The Japanese government are convinced that having regard to the vital interests which Japan, as distinct from the other powers, has in the regions of South Manchuria and Mongolia, the United States government will appreciate the circumstances which compelled the Japanese government to make a special and legitimate reservation indispensable to the existence of the state and its people.

In short, the present proposal of the Japanese government in regard to Manchuria and Monogolia is based, as already explained, on the paramount importance of the economic existence and national security of the country, coupled with a due regard for the general peace of the Far East,—considerations which have been strengthened by the recent development of the situation. Consequently the Japanese government are prepared to co-operate with the financiers of the powers concerned in Manchuria and Mongolia so long as the main purpose of their proposal as above enunciated remains respected. It would be needless to say that that proposal was prompted by no desire of making any territorial demarcation involving the idea of economic monopoly or of asserting any exclusive political pretentions or of affirming a doctrine of any far-reaching sphere of interest in disregard of the legitimate national aspirations of China, as well as of the interests possessed there by the powers concerned. It is confidently hoped that the United States government would submit these points to their serious consideration.

The Japanese government are gratified that the United States government acknowledges in its memorandum now under review the exclusion from the scope of the common activities of the new consortium, not only of those Japanese undertakings in Manchuria and Eastern Inner Mongolia which are already developed and constitute vested proprietary interests, but also of the existing options in connection with railways already in operation (for instance the proposed continuation to Taonan of the Ssupingkai-Chengchiatun Railway and to Hueining of the Kirin-Changchun Railway) and makes it abundantly clear that Japan's legitimate rights and interests are in no case to be jeopardized. Having regard to the considerations of assuring the national security referred to above, it is expected that the principal instances of Japan's legitimate undertakings, as enumerated in the attached statement, will be excluded from the scope of the common activities of the new consortium. The British foreign minister invited Viscount Chinda on the 19th of November last year, if there is any fear that any project launched under the ægis of the consortium might threaten the strategic security of Japan, to guard against this danger by proposing a formula to meet the case. It is believed that the views of the British government in this respect are shared by the United States government.

Accordingly, the Japanese government, while authorizing the Japanese bankers' group to enter the proposed consortium on the same footing as the bankers' groups of the other powers concerned, venture to propose to achieve the settlement of the matter at issue by exchanging between the Members concerned a note embodying the sense of the formula hereto attached.

FORMULA.

The Japanese government accept and confirm the resolutions passed at the conference of the representatives of the banking groups of the United States, Great Britain, France and Japan which met in Paris on May 11th and 12th, 1919, for the purpose of organizing a new consortium. In matters, however, relating to loans affecting South Manchuria and Eastern Inner Mongolia which in their opinion are calculated to create a serious impediment to the security of the economic life and national defense of Japan, the Japanese government reserve the right to take the necessary steps to guarantee such security.

Japanese Embassy,

March 2nd, 1920.

Sketch Map of China Showing Railways

This map shows all the railways in operation and under contract with the consortium groups for construction. We have added in the lines suggested by Dr. Sun Yat-sen as urgently required for the colonization, development and strategic defense of Mongolia, the only spot in the world left for the expansion of the Yellow races.

IMPERIAL JAPANESE EMBASSY, WASHINGTON.

1. The South Manchuria Railway and its branches, together with the mines which are subsidiary to the Railway, are unaffected by the scope of the common activities of the new consortium.

2. The construction of the Kirin-Changchun Railway, Shinminfu-Mukden Railway and Ssupingkai-Changchiatun Railway has been completed, and their operation has already been commenced. They fall therefore within the category of those enterprises which according to Article 2 of the proposed inter-group agreement, have already made substantial progress, and are outside the scope of the common activities of the new consortium.

3. The Kirin-Hueining Railway, the Changchiatun-Taonanfu Railway, the Changchun-Taonanfu Railway, the Kaiyuan-Kirin Railway, the Taonanfu-Jehol Railway and the railway connecting a point in the Taonanfu-Jehol Railway with a seaport are branch or feeding lines of the South Manchuria Railway. moreover, having regard to the fact that, as stated in the memorandum dated March 2, these lines together with the South Manchuria Railway do not only bear a most important relation to the national defense of Japan, but also constitute a powerful factor in the manitenance of peace and order in the Far East; and also in view of the fact that, as an extension of the railways already in operation as set forth in the memorandum of the United States government, these lines form the subject of legitimate rights of Japan, it is expceted that they will be placed outside the scope of the common activities of the new consortium. It is not unlikely, however, that in case of any loan being floated in future in connection with these railways, the European and American markets will be invited to subscribe to it.

Japanese Embassy,
March 2nd, 1920.

DEPARTMENT'S MEMORANDUM DATED MARCH 16th, 1920, TO THE JAPANESE EMBASSY IN REPLY TO THE JAPANESE MEMORANDUM OF MARCH 2nd.

MEMORANDUM.

The government of the United States has received and carefully considered the memorandum under date of March 2nd, 1920, in which the Japanese ambassador set forth the views of his government as to the formation of the proposed international consortium for loans to China; and it is happy to record the hearty gratification with which it has noted the disavowal by Japan of any claim to exclusive economic or political rights with respect to South Manchuria and Eastern Inner Mongolia.

The American government cannot but acknowledge, however, its grave disappointment that the formula proffered by the Japanese government is in terms so exceedingly ambiguous and in character so irrevocable that it might be held to indicate a continued desire on the part of the Japanese government to exclude the American, British and French banking groups from participation in the development, for the benefit of China, of important parts of that republic,—a construction which could not be reconciled with the principle of the independence and territorial integrity of China.

The government of the United States is not unsympathetic with the professed objects of the principle embodied in the Japanese formula: it considers, on the other hand, first, that the right of national self-preservation is one of universal acceptance in the relations between states, and therefore would not require specific formulation as to its application in any particular instance; and, second, that the recognition of that principle is implicit in the terms of the notes exchanged between Secretary Lansing and Viscount Ishii on November 2nd, 1917. This government therefore considers that by reason of the particular relationships of understanding thus existing between the United States and Japan, and those which, it is understood, similarly exist between Japan and the other powers proposed to be associated with it in the consortium, there would appear to be no occasion to apprehend on the part of the consortium any activities directed against the economic life or national defense of Japan. It is therefore felt that Japan could with entire assurance rely upon the good faith of the United States and of the other two powers associated in the consortium to refuse their countenance to any operation inimical to the vital interests of Japan: and that Japan's insistence that the other three powers join with it in the proposed formula as a condition precedent would only create misapprehension. It is felt, moreover, that such a formula would not only be unnecessary, but would lend itself to misconstruction for the reason that it apparently differentiates between the status of South Manchuria and Eastern Inner Mongolia and that of other Chinese territory. The mere fact of differentiation would, it is apprehended, give rise to questions which would tend still further to unsettle the already complex situation in China. The government is therefore hopeful that the Japanese government may in view of its several existing relationships of understanding with the United States and the other two powers be persuaded to rely upon their good faith in this matter and forego its proposal to require explicit guarantees, the mere statement of which opens the way for possible misconstruction and misapprehension in the future.

The government of the United States has furthermore been happy to note the readiness of the Japanese government to enumerate the specific vested interests of its nationals, in Manchuria and Mongolia, which it would propose to exclude from the scope of operations of the proposed consortium; although it finds it difficult to believe that in order to meet the necessities of Japanese economic or political security it is essential for Japan alone to construct and control a railway line of such a character as the one projected from Taonanfu to Jehol and thence to the seacoast.

It is hoped that the discussions now in progress in Tokyo between Mr. Lamont, on behalf of the American group, and the representatives of the Japanese banking interests may result in such a complete understanding on the question of the specific enterprises in Manchuria and Mongolia, which it may be found mutually satisfactory to exclude from the operation of the consortium, as would enable the Japanese government to accord to that understanding its unqualified approval.

In conclusion, the government of the United States takes pleasure in the fact that the frank interchanges of views which have thus far taken place appear to have resulted in a basis of mutual understanding which justifies the belief that a speedy completion of the organization of the consortium is now possible.

Department of State,
Washington, March 16th, 1920.

MEMORANDUM LEFT WITH EARL CURZON BY THE JAPANESE AMBASSADOR, MARCH 16th, 1920.

The Japanese government have given their serious consideration to the British government's note of the 19th November last relative to the formation of a new consortium. The British government appear to be under the impression that the proposal of the Japanese government in regard to South Manchuria and Eastern Inner Mongolia amounts either to the assertion of a monopoly of economic interests in that region or to the establishment of a so-called sphere of interest there, and further, that such a proposal cannot be reconciled with the principle of independence and territorial integrity of China.

The Japanese government desires to set forth once again their views frankly on the purpose of their proposal and invite further consideration on the part of the British government on this subject.

From the nature of the case the regions of South Manchuria and Eastern Inner Mongolia, which are contiguous to our territory of Korea, stand in very close and special relations to Japan's national defence and her economic existence. Enterprises launched forth in these regions, therefore, often involve interests vital to the

safety of our country. This is why Japan has special interests in these regions and has established there special rights of various kinds. The Japanese government are under no misapprehension or misgiving as to the purpose of the organization of the consortium, and are glad to co-operate under such an arrangement with the powers concerned for the promotion of the general welfare of China. But, as is suggested in the proposed consortium merely out of business considerations, to throw open to the common activities of an international financial combination even those enterprises in the regions of South Manchuria and Eastern Inner Mongolia which vitally affect the economic existence and national defence of Japan would be no safe way of providing for the national peace and security, and for this reason it would hardly meet with the approval of the public opinion in Japan. These considerations were fully set forth by Viscount Chinda in his interview with Lord Curzon on the 1st September last year.

Furthermore, the development of the Russian situation, exercising as it does an unwholesome influence upon the Far East, is a matter of grave concern to Japan ; in fact, the conditions in Siberia, which have been developing with such alarming precipitancy of late, are by no means far from giving rise to a most serious situation, which may at any time take a turn threatening the safety of Japan and the peace of the Far East and ultimately place the entire Eastern Asia at the mercy of the dangerous activities of extremist forces. Having regard to these signals of the need — imminent character of the situation, the Japanese government all the more kennly feel the need of adopting measures calculated to avert any such danger in the interest of the Far East as well as of Japan. Now, South Manchuria and Mongolia are the gate by which this direful influence may effect its penetration into Japan and the Far East to the instant menace of their security. The Japanese government are convinced that, having regard to the vital interests which Japan, as distinct from the other powers, has in the regions of South Manchuria and Mongolia, the British government will appreciate the circumstances which compelled the Japanese government to make a special and legitimate reservation indispensable to the existence of the state and its people.

In short, the present proposal of the Japanese government in regard to Manchuria and Mongolia is based, as already explained, on the paramount importance of the economic existence and national security of the country, coupled with a due regard for the general peace of the Far East, a consideration which has been strengthened by the recent development of the situation. Consequently Japan is prepared to co-operate in Manchuria and Mongolia with the financiers of the powers concerned so long as the main purpose of their proposal an above enunciated remains respected ; nor need they say that their proposal was prompted by no desire of making any territorial demarcation involving the idea of economic monopoly or of affirming or pretending sphere of interests, or of acting in defence of the principle of the independence and territorial integrity of China. It is confidently hoped that the British government will take these points into their most serious consideration.

Lord Curzon invited Viscount Chinda—if there is any fear that any project launched under the ægis of the consortium might threaten the strategic security of Japan—to guard against this danger by proposing a formula to meet the case. It is a cause of gratification to know that the British government thus share the apprehensions entertained by the Japanese government. In view of the foregoing considerations, the Japanese government, while authorizing the Japanese bankers' group to enter the proposed consortium on the same footing as the bankers' groups of the other powers concerned, venture to propose to achieve the settlement to the question at issue by exchanging between the government concerned a note embodying the sense of the formula hereto attached.

FORMULA.

The Japanese government accept and confirm the resolutions passed at the conference of the representatives of the banking groups of the United States, Great Britain, France and Japan which met at Paris on the 11th and 12th May, 1919, for the purpose of organizing a new consortium. In matters, however, relating to loans affecting South Manchuria and Eastern Inner Mongolia, which in their opinion are calculated to create a serious impediment to the security of the economic life and national defence of Japan, the Japanese government reserve the right to take the necessary steps to guarantee such security. March 16th, 1920.

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1. The South Manchurian Railway and its branches, together with the mines which are subsidiary to the railway, are unaffected by the loans to be made. Hence they do not come within the scope of the common activities of the new consortium.

2. The construction of the Kirin-Changchun Railway, Sinminfu-Mukden Railway and Ssupingkai-Chengchiatun Railway has been completed and their operation has already been commenced. They fall, therefore, within the category of these enterprises which according to Article 2 of the proposed inter-group agreement, have already made substantial progress, and are outside the scope of the common activities of the new consortium.

3. The Kirin-Huiening Railway, the Chengchiatun-Taonanfu Railway, Changchun-Taonanfu Railway, the Kaiyuan-Kirin Railway, and the Taonanfu-Jehol Railway and the railway connecting a point on the Taonanfu-Jehol Railway with a seaport are branch of feeding lines of the South Manchuria Railway. Moreover, having regard to the fact that, as set forth in the memorandum dated the 16th March, 1920, these lines, together with the South Manchurian Railway, not only bear the most important relation to the national defence of Japan, but also constitute a powerful factor in the maintenance of peace and order in the Far East, it is expected that they will be placed outside the scope of the common activities of the new consortium. Both the British and the American governments have already agreed to the exclusion of most of these lines. It is not unlikely, however, that in case of any loan being floated in future in connection with these railways the European and American markets will be invited to subscribe to it.

EARL CURZON TO VISCOUNT CHINDA.

His Majesty's principal secretary of state for foreign affairs, having carefully studied the memorandum and formula communicated by his Excellency the Japanese ambassador on the 16th March relative to the position of South Manchuria and East Inner Mongolia under the proposed consortium, has the honor to make the following observations :—

In the memorandum handed to Viscount Chinda on the 20th November last, Lord Curzon clearly enunciated the objections felt by His Majesty's government to the Japanese claim to exclude from the sphere of the consortium a large geographical area of China, and he is now regretfully forced to the conclusion that little or no modification of this original attitude is to be found in the wording of the formula suggested. The phrase which runs—

"In matters relating to loans affecting South Manchuria and East Inner Mongolia which in their opinion are calculated to create a serious impediment to the security of the economic life and national defence of Japan, the Japanese government reserve the right to take the necessary steps to guarantee such security" is so ambiguous and general in character that it might be held to indicate on the part of the Japanese government a continued desire to exclude the co-operation of the other three banking groups from participating in the development, for China's benefit, of important parts of the Chinese republic and therefore creates the impression that the Japanese reservation cannot be reconciled with the principle of the independence and the realization of the integrity of China.

While His Majesty's government clearly recognize the legitimate desire of the Japanese nation to be assured of the supplies of food and raw material necessary to her economic life and her justifiable wish strategically to protect and maintain the Korean frontier, they find it impossible to believe that, in order to meet

such needs, it is essential for Japan alone to construct and control, for instance, the three railway lines mentioned in the third reservation lying to the west of the South Manchurian Railway.

In order, however, to meet as far as possible the wishes of the Japanese government and at the same time to avoid the mention of specific areas, which rightly or wrongly might give rise to the impression that a special sphere of interest was being officially recognized, His Majesty's government would be prepared to subscribe to a written assurance to the effect that the Japanese government need have no reason to apprehend that the consortium would direct any activities affecting the security of the economic life and national defense of Japan and that the Japanese government can firmly rely on the good faith of the powers concerned to refuse to countenance any operations inimical to such interests.

Foreign Office,
March 19th, 1920.

IMPERIAL JAPANESE EMBASSY, WASHINGTON.

The Japanese government have received the memorandum of the United States government dated March 16th, 1920, giving frank expression to its views again upon the proposal of Japan relative to the organization of a new consortium for loans to China, and have taken it into their careful consideration.

The Japanese government are happy to express the hearty gratification with which they have noted that the United States government is fully appreciative of and even sympathetic with the principle embodied in the formula proposed by the Japanese government. The United States government, however, is inclined to think that the terms and character of the formula may be taken to indicate a continued desire on the part of Japan to exclude the other powers from participation in the development of important parts of China, and that it is likely to create unnecessary misapprehension. The memorandum adds that the United States government is therefore hopeful that the Japanese government will withdraw their proposal for the explicit guarantee embodied in the formula in question. The Japanese government, while acknowledging that this suggestion of the United States is offered in the most friendly spirit, would like to state that they made the proposal now under review only beacuse they felt it useful and important to do so in order to make clear the particular position which Japan occupies through the facts of territorial propinquity and of her special vested rights.

They never thought of any possibility of the formula giving rise of any such misapprehension or misconstruction as is pointed out by the United States government. They are glad, however, to note that it is not so much to the principle of their proposal as to its form that the United States government takes exception. Assurance is given in the memorandum of the United States government that the right of national self-preservation, which forms the basis of the guarantee required by Japan in order to assure the security of her national defense and the economic existence of her people, is not only one of universal acceptance but one of which the recognition is implied in the terms of the notes exchanged between Secretary Lansing and Viscount Ishii, so that the new consortium would in no case embark upon any activities directed against the national defense and the economic existence of Japan and so that the powers associated in the consortium would refuse their countenance to any enterprise inimical to the vital interests of Japan. Accordingly, after deliberate consideration, the Japanese government relying upon that assurance of the United States, have come to the decision to accept most willingly the suggestion of the United States government and to forego their request for the acceptance of the proposal formula on the part of the other interested powers, on condition that these powers agree to the above understanding as formulated by the United States government.

As to the railway and other enterprises which Japan naturally expects will be excluded from the scope of the common activities of the new consortium, the United States government expresses a doubt as to whether it is essential for Japan alone to construct and control such a railway as the Taonanfu-Jehol line. This railway, together with line connecting a point thereon with a seaport, was projected with the strategic object of making it a means of common defence on the part of China and Japan against foreign invasion coming from the direction of Ourga, quite apart from the further object of facilitating development of the districts through which these lines run. It is, therefore, a matter of great regret and surprise to the Japanese government that there exists the misunderstanding that these railways will eventually prove a menace to Peking. It is confidently hoped that Japan's position in this connection may be fully appreciated by the United States government. The Japanese government, mindful as they are of the common interests of the powers, have no objection to a scheme of making these two railways a joint enterprise of the new consortium, but having regard to the particular relation in which Japan stands to these railways, it is hoped that the United States government will lend their full support to the following two propositions:—

(1) In the event of the new consortium projecting in future a scheme of extending the Taonanfu-Jehol Railway to the north with a view to connection with the Eastern Chinese Railway, the assent of the Japanese government thereto must be obtained beforehand through the Japanese group, inasmuch as such an extension being tantamount to a renewal of the so-called Chinchou-Aigun railway scheme against which a protest was lodged by Japan when the question was motioned some years ago, is calculated to have a serious effect upon the South Manchuria Railway.

(2) In consideration of the particular desire of Japan that these two lines should be built as speedily as possible, the Japanese group, after due consultation with the other groups, may be permitted to undertake their construction single-handed in the event of the other three powers associated in the new consortium being reluctant to finance it. In that case, having regard to the fact that these railways must cross the Peking-Mukden Railway at a certain point, the American group will give their support to the overture which the Japanese financiers will make to their British colleagues with a view to perfecting the junction of these lines.

As regards concrete questions as to which of the options that Japan possesses at present in Manchuria and Mongolia in respect to railways, is to be excluded, in accordance with the understanding reached between the governments of the United States and Japan, from the scope of the common activities of the new consortium, the Japanese government entirely share the view of the United States government that a settlement satisfactory to both parties will be arrived at through the discussion now in progress in Tokio between Mr. Lamont and the representatives of the Japanese banking group. In this belief, the representatives of the Japanese banking group are authorized to proceed with the discussion with Mr. Lamont with the object of arriving at a settlement of questions of this nature.

Japanese Embassy,
Washington, April 3rd, 1920.

MEMORANDUM LEFT WITH SIR EYRE CROWE BY THE JAPANESE AMBASSADOR, APRIL 14th, 1920.

The Japanese government have received the memorandum of the British government dated the 19th March, 1920, giving frank expression of their views again upon the proposal of Japan relative to the organization of a new consortium for loans to China and have taken it into their careful consideration.

The Japanese government are happy to express the hearty gratification with which they have noted that the British government are fully appreciative of Japan's legitimate aspirations in the direction of safeguarding her national defence and the economic existence of her people, a principle embodied in the formula proposed by the Japanese government, and that they have given as-

surances of performing all that is in their power to meet the wishes of the Japanese government. The British government, however, are inclined to think that the terms and character of the formula may be taken to suggest a continued desire on the part of Japan to exclude the other powers from participation in the development of important parts of China, and it is likely to create the impression that Japan's reservations, as indicated by the terms of the formula, are incompatible with the principle of the independence and territorial integrity of China. Moreover as it is apprehended that the indication of territorial demarcation may give rise to the impression of official recognition being accorded to the principle of special interests, the British government are hopeful that any expressions of this nature may be avoided. The Japanese government, while acknowledging that this suggestion of the British government is offered in the most friendly spirit, would like to state that they made the proposal now under review only because they felt it useful and important to do so in order to make clear the particular position which Japan occupies through facts of territorial propinquity and of her special vested interest. They never thought of any possibility of the formula giving rise to any such misapprehension or misconstruction as is pointed out by the British government. They are glad, however, to note that it is not so much to the principle of their proposal as to its form that the British government takes exception.

Accordingly, after deliberate consideration, the Japanese government, relying upon the promise of the British government to give them a written assurance to the effect that they fully recognize the fundamental principle of safeguarding the integrity of the national defence and the economic existence of Japan as proposed by Japan, so that the Japanese government have no occasion to apprehend that the new consortium would embark upon any activities affecting the national defence and the economic existence of Japan and so that the powers concerned would refuse their countenance to any enterprise inimical to such Japanese interests, have come to the decision to accept most willingly the suggestion of the British government and to forgo their demand for the acceptance of the proposed formula on the part of the other interested powers on the condition that these powers agree to the above understanding as formulated by the British government.

As to the railway and other enterprises which Japan naturally expects will be excluded from the scope of the common activities of the new consortium, the British government express a doubt as to whether it is essential for Japan alone to construct and control the three railway lines running west of the South Manchurian Railway. The Taonanfu-Jehol Railway, and the lines connecting a point thereon with a seaport, were projected with the strategic object of making it a means of common defence on the part of China and Japan against foreign invasion coming from the direction of Ourga, quite apart from the further object of facilitating development of the districts through which these lines run. It is therefore a matter of great regret and surprise to the Japanese government that there exists the misunderstanding that these railways will eventually prove a menace to Peking. It is confidently hoped that Japan's position in this connection may be fully appreciated by the British government. The Japanese government, mindful as they are of the common interests of the powers, have no objection to a scheme of making these two railways a joint enterprise of the new consortium, but, having regard to the particular relation in which Japan stands to these railways, it is hoped that the British government will lend their full support to the following two propositions :—

1. In the event of the new consortium projecting in future a scheme of extending the Taonanfu-Jehol Railway to the north with a view to connecting them with the Eastern Chinese Railway, the assent of the Japanese government thereto must be obtained beforehand, through the Japanese group, inasmuch as such an extension—being tantamount to a renewal of the so-called Chinchou-Aigun Railway scheme, against which a protest was lodged by Japan when the question was mooted some years ago—is calculated to have a serious effect on the South Manchurian Railway.
2. In consideration of the particular desire of Japan that these two lines should be built as speedily as possible, the Japanese group, after due consultation with the other groups, may be permitted to undertake their construction single handed in the event of the other three powers associated in the new consortium being reluctant to finance it. In that case, having regard to the fact that these railways must cross the Peking-Mukden Railway at a certain point, the British government will use their best endeavors towards bringing a happy conclusion to the negotiations which the Japanese financiers may enter upon with their British colleagues with a view to perfecting tc junction of these lines.

As regards concrete questions as to which of the options that Japan possesses at present in Manchuria and Mongolia in respect of railways is to be excluded, in accordance with the understanding reached between the governments of Great Britain and Japan, from the scope of the common activities of the new consortium, it is believed that a satisfactory settlement will be reached through the discussions now proceeding in Tokyo, with the cognizance of the American and Japanese governments, between Mr. Lamont, who besides being representative of the American group, is understood to have certain definite understandings on the subject with both the British and the French groups, and the representative of the Japanese banking group. The Japanese government will therefore authorize the Japanese group to proceed with the discussion with Mr. Lamont for the purpose of arriving at a conclusive settlement of questions of this nature.

Japanese Embassy, London,

April 14th, 1920.

EARL CURZON TO VISCOUNT CHINDA.

His Majesty's government have received the further memorandum of the Imperial Japanese government of the 14th April, and after having given it their careful consideration, have the honor to reply as follows :

His Majesty's government are much gratified to learn that the Japanese government are prepared to accept the written assurance to which Lord Curzon declared his willingness to subscribe in his note to Viscount Chinda of the 19th March, and that provided the other powers agree to give a similar assurance, the imperial government are willing to forgo the request which they had made in their note of the 16th March that the powers interested should accept the formula, the wording of which had appeared somewhat ambiguous in character.

As regards the two propositions mentioned in the Japanese government's memorandum under reply, His Majesty's government much regret that the Imperial government should have raised these questions at a moment when it was hoped that the four powers interested were about to reach an agreement on the basis of a compromise which Mr. Lamont, the representative of the American banking group, appeared to have reached in Tokyo with the representatives of the Japanese group. His Majesty's government fear that if the discussion of these propositions is insisted upon it will merely delay matters, and in the interests of all parties concerned, they sincerely trust the Imperial government will be willing to withdraw them and to be satisfied with the general assurance to which His Majesty's government have already offered to subscribe, and which the Imperial government have just expressed their willingness to accept.

In order to meet the wishes of the Imperial government, His Majesty's government are prepared to agree to the terms of the compromises proposed by Mr. Lamont in Tokyo and to waive the objections which they had at one time offered to the exclusion

from the consortium of the two projected railway lines from Taonanfu to Changchun and from Taonanfu to Chengchiatun.

As regards proposition (1) Japan practically asks for a right to veto construction by the consortium, of a line from Taonanfu to join the Chinese Eastern Railway, on the grounds that such an extension would be tantamount to a renewal of the so-called Chinchou-Aigun Railway scheme, against which Japan had lodged a protest some years ago.

His Majesty's government have no wish to do anything which would conflict with the vital interests of their ally, and the assurance to which they have declared their willingness to subscribe would appear fully to safeguard Japan's interest. It appears to His Majesty's government that with the establishment of the consortium a new era is about to dawn in which conditions have changed, and it is now proposed that the powers should work together in harmonious and friendly co-operation rather than in competition, and granting to any one party to the consortium the power to veto in advance the possible construction of a railway would appear to be contrary to the principles upon which the idea of a consortium is based.

In the opinion of His Majesty's government, the contingency anticipated in proposition (2) would appear to be already provided for in Article 4 of the inter-group conference in Paris of the 12th of May, 1919 of which His Majesty's government have expressed their approval.

His Majesty's government sincerely trust that the Imperial government will recognize the friendly spirit in which these observations are made, and that they will now agree to co-operate with the other three powers along the lines of the proposed compromise. They note with gratification that the Japanese government is prepared to authorize the Japanese group to proceed with the discussion with Mr. Lamont for the purpose of reaching a settlement. They trust that the Imperial government will now see their way to give this authorization without the suggested reservations, in order that the final arrangements between the groups may be completed whilst Mr. Lamont is still in Peking, and the necessary exchange of letters between the representatives of the Japanese and American groups effected with the least possible delay.

Foreign Office,
April 28th, 1920

DEPARTMENT'S REPLY DATED APRIL 29th, 1920, TO THE MEMORANDUM FROM THE JAPANESE EMBASSY OF APRIL 3rd, 1920.

MEMORANDUM.

The American government has received the further memorandum of the Imperial Japanese government of April 3rd and after having given it careful consideration has the honor to reply as follows :

The American government is much gratified to learn that the Japanese government is prepared to accept most willingly the suggestion of the American government to forego its request for the acceptance of the proposed formula which it had made in its note of March 20th.

As regards the two propositions mentioned in the Japanese government's memorandum under acknowledgment the American government much regrets that the Imperial government should have raised these questions at a moment when it was hoped that the four powers interested were about to reach an agreement on the basis of compromise which Mr. Lamont, the representative of the American banking group, appeared to have reached in Tokyo with the representatives of the Japanese group. The American government fears that if the discussion of these propositions is insisted upon it will merely delay matters and in the interests of all parties concerned it sincerely trusts that the Imperial Japanese government will be willing to withdraw them and to be satisfied with the general assurance to which the American government has already offered to subscribe and which the Imperial Japanese government has just expressed its readiness to accept.

In order to meet the wishes of Japan the American government is prepared to agree to the terms of the compromise proposed by Mr. Lamont in Tokyo.

As regards proposition one, Japan practically asks for a right to veto the construction by the consortium of a line from Taonanfu to join the Chinese Eastern Railway on the grounds that such an extension would be tantamount to a renewal of the so-called Chinchou-Aigun Railway scheme against which Japan had lodged a protest some years ago. The government of the United States has no wish to do anything which would conflict with the vital interests of Japan and the assurance to which it has declared its willingness to subscribe would appear fully to safeguard Japan's interests. It appears to the American government that, with respect to the establishment of the consortium, a new era is about to dawn in which conditions have changed and it is now proposed that the powers should work together in harmonious and friendly co-operation rather than in competition and the granting to any one party to the consortium of the power to veto the possible construction of a railway would appear to be contrary to the principles upon which the idea of the consortium is based.

In the opinion of the American government the contingency anticipated in proposition two would appear to be already provided for in Article IV of the inter-group agreement at Paris on May 12th, paragraph 19, of which the American government has expressed its approval. The American government sincerely trusts that the Imperial Japanese government will recognize the friendly spirit in which these observations are made and that it will now agree to co-operate with the other three powers along the lines of the proposed compromise. It notes with gratification that the Japanese government is prepared to authorize the Japanese group to proceed with the discussion with Mr. Lamont for the purpose of reaching a settlement. It expresses the hope that the Japanese government will now see its way to give this authorization without the suggested reservations in order that the final arrangements between the groups may be concluded while Mr. Lamont is still in Peking and the necessary exchange of letters between the representatives of the Japanese and American groups effected with the least possible delay.

Department of State,
Washington, April 29th, 1920.

IMPERIAL JAPANESE EMBASSY, WASHINGTON.

MEMORANDUM.

The Japanese government received on May 3rd the memorandum of the American government dated April 29th in reply to their memorandum of April 3rd last, and have carefully examined it.

The Japanese government are happy to note that the American government is much gratified with the readiness of the Japanese government to forego, in reliance upon the assurances given in the memorandum of the American government dated March 16th last, their request for the acceptance of the proposed formula, and that the American government has lent emphasis to the assurance to which it had already subscribed.

As regards the two points made by the Japanese government relating to the Taonanfu-Jehol Railway and the line connectint a point thereon with a seaport, the American government seems to think that they constitute new propositions and expresses regret that these questions should have been raised at a moment when it was hoped that the four powers concerned were about to reach an agreement.

In particular the American government appears to be of opinion that the point, (1) namely, Japan's desire in regard to the extension of the Taonanfu-Jehol Railway, is tantamount to a claim for an exclusive power of veto and is therefore contrary to the fund-

amental principles upon which the idea of the new consortium is based. The Japanese government, in making the point in question, were prompted by no desire of putting forward any new condition or demand. It was simply in order to avoid future misunderstanding that the point was raised as one of the actual examples of enterprises prejudicial to Japan's vital interests which formed the subject matter of the general assurances given by the American government. The Japanese government feel confident that as the question involved in this case comes within the scope of the general assurances, the government of the powers interested in the consortium will, in the spirit of mutual trust and friendliness, readily appreciate Japan's point of view. As to the point (2) the Japanese government have raised it merely in order to set forth the circumstances in which they feel the need of assistance and co-operation of the powers concerned in the actual construction of the Taonanfu-Jehol Railway and the line connecting a point thereon with a seaport.

In thus giving frank expression to their hope, the Japanese government were inspired by no other desire than to make an appeal to the spirit of general co-operation which forms the foundation of the consortium.

The Japanese government, holding as they do the views as above enunciated, have no intention whatever of insisting upon obtaining the explicit assurances or consent of the American government in regard to the two points above referred to. Their idea is simply to bring the powers concerned to an understanding of their interpretation in these respects. Relying, however, upon the friendly spirit in which the American government was good enough to reaffirm the fact that the general assurances to which it has already offered to subscribe are adequate enough to safeguard the interests of Japan, the Japanese government would refrain from further insisting on the discussion of these points, and, in order to facilitate the formation of the new consortium with the least possible delay, they would be satisfied at this juncture with bringing to the knowledge of the American government their interpretation of these questions and will be prepared to lend their support to the conclusion of an arrangement between the banking groups concerned and to give it the necessary confirmation.

Japanese Embassy,
May 8th, 1920.

DEPARTMENT'S REPLY TO THE NOTE OF THE JAPANESE EMBASSY, DATED MAY 8th, 1920.

The government of the United States has been pleased to receive the Imperial Japanese government's memorandum of May 8th, 1920, in reply to that of the government of the United States dated the 29th of the preceding month, and is deeply gratified to observe therefrom that the Imperial Japanese government has no intention of insisting upon the explicit assurance or consent of the government of the United States in regard to the two points raised by the Imperial Japanese government with reference to the Taonanfu-Jehol Railway and the line connecting a point thereon with a seaport. The government of the United States also takes note with sincere pleasure that the Imperial Japanese government is prepared to lend its support to the conclusion of the arrangement between the banking groups concerned, and to give the arrangement the necessary confirmation uopn the same terms as the governments of the United States, Great Britain, and France have already done without conditions or provisos.

It is most gratifying to the government of the United States that the underlying principles and policies of the new international consortium are now so fully understood and agreed upon that the representatives of the banking groups may proceed to its formation and the consideration of the working details of its operation. The government of the United States again can assure the Imperial Japanese government that its sole aim in all the negotiations just completed has been to bring about an arrangement which would insure entire co-operation on the part of the interested governments on a basis which would be to their mutual advantage and for the lasting benefit of China. The government of the United States looks forward with keen anticipation to the friendly co-operation under the consortium arrangement, with entire confidence that such practical joint endeavor is the beginning of a new era of good will and accomplishment for both governments.

Department of State,
Washington, May 8th, 1920.

MEMORANDUM COMMUNICATED BY JAPANESE EMBASSY TO BRITISH FOREIGN OFFICE, MAY 11th, 1920.

The Japanese government have received the memorandum of the British government, dated April 28th, in reply to their memorandum of the 14th April last, and have carefully examined it.

The Japanese government are happy to note that the British government are much gratified with the readiness of the Japanese government to forgo, in reliance upon the assurances given in the memorandum of the British government, dated the 19th March last, their request for the acceptance of the proposed formula, and that the British government have lent emphasis to the assurance to which they had already subscribed.

The Japanese government are glad to learn further that the British government are prepared to waive the objections which she had at one time offered to the exclusion from the consortium of the two projected railway lines from Taonanfu to Changchun and from Taonanfu to Chengchiatun.

As regards the two points made by the Japanese government relating to the Taonanfu-Jehol Railway and the line connecting a point thereon with a seaport, the British government seem to think that they constitute new propositions, and express regret that these questions should have been raised at a moment when it was hoped that the four powers concerned were about to reach an agreement.

In particular, the British government appear to be of opinion that the point (1), namely, Japan's desire in regard to the extension of the Taonanfu-Jehol Railway, is tantamount to a claim for an exclusive power in veto, and is therefore contrary to the fundamental principles upon which the idea of the new consortium is based. The Japanese government, in making the point in question, were prompted by no desire of putting forward any new condition or demand. It was simply in order to avoid further misunderstanding that the point was raised as one of the actual examples of enterprises prejudicial to Japan's vital interest which formed the subject matter of the general assurances given by the British government. The Japanese government feel confident that, as the question involved in this case comes within the scope of the general assurances, the governments of the powers interested in the consortium will, in the spirit of mutual trust and friendliness, readily appreciate Japan's point of view. As to the point (2) the Japanese government have raised it merely in order to set forth the circumstances in which they feel the need of the assistance and co-operation of the powers in the actual construction of the Taonanfu-Jehol Railway and the lines connecting a point thereon with a seaport.

In thus giving a frank expression to their hope, the Japanese government were inspired by no other desire than to make an appeal to the spirit of general co-operation which forms the foundation of the consortium.

The Japanese government, holding as they do the views as above enunciated, have no intention whatever of insisting upon obtaining the explicit assurances of consent of the British government in regard to the two points above referred to. Their idea is simply to bring the powers concerned to an understanding of their interpretation in these respects. Relying, however, upon the friendly spirit in which the British government were good

enough to reaffirm the fact that the general assurances to which they have already offered to subscribe are adequate enough to safeguard the interests of Japan, the Japanese government would refrain from further insisting upon the discussion of these points and, in order to facilitate the formation of the new consortium with the least possible delay, they would be satisfied at this juncture with bringing to the knowledge of the British government their interpretation of these questions, and will be prepared to lend their support to the conclusion of an arrangement between the banking groups concerned and to give it the necessary confirmation.

Japanese Embassy, London,
May 10th, 1920.

LETTER TO MR. THOMAS W. LAMONT FROM MR. NAKAJI KAJIWARA, DATED MAY 11th, 1920.

Mr. Thomas W. Lamont,

J. P. Morgan & Co., the Representative of the American Group.

You will recall that upon the organization of the consortium at Paris, on May 11th and 12th, last, the representatives of the Japanese, American, British and French banking groups attached their signatures to the resolutions and agreement subject to the approval of their respective governments. You will further recall that, upon the instructions of the Japanese government, our banking groups addressed you a letter dated 18th June last as regards the conditions of accepting the new consortium agreement.

We have now the honor to inform you that certain points in the agreement and in the operations of the proposed consortium, hitherto somewhat obscure, having been cleared up ro the satisfaction of our government and of ourselves, we are now able in accordance with the instructions of the Japanese government to withdraw our letter dated 18th June last and announce that, conjointly with the American, British and French banking groups and on like terms with them, we will accept the consortium agreement. We beg at the same time to express our hearty concurrence with the general ideas and objects of the consortium in respect to China.

Very truly yours,

(Signed) NAKAJI KAJIWARA,

The President of the Yokohama Specie Bank,
For and on behalf of the Japanese Group.

LETTER TO MR. N. KAJIWARA FROM MR. THOMAS W. LAMONT, DATED MAY 11th, 1920.

N. Kajiwara, Esquire,
Tokyo, Japan.

Dear Sir,—We beg to acknowledge with thanks, the receipt of your communication of May 11th, 1920, informing us, in behalf of the Japanese banking group that, under the instructions of your government, you have now withdrawn your letter dated June 18th, 1919, and have adopted, in association with the banking groups of America, Great Britain and France and on like terms with them, the agreement for the establishment of a new consortium in respect to China.

We are happy to note that certain points that had hitherto been somewhat obscure to your group and to your government have now been made plain, and we trust with you that the way is clear for the consortium to undertake operations.

Inasmuch as some questions have arisen during our discussions as to the status of specific railway enterprises contemplated or actually begun in Manchuria and Mongolia, we hereby confirm that we have agreed with you as follows :

(1) that the South Manchurian Railway and its present branches, together with the mines which are subsidiary to the railway, do not come within the scope of the consortium ;

(2) that the projected Taonanfu-Jehol Railway and the projected railway connecting a point on the Taonanfu-Jehol Railway with a sea-port are to be included within the terms of the consortium agreement ;

(3) that the Kirin-Huining, the Chengchiatun-Taonanfu, the Changchun-Taonanfu, the Kaiyuan-Kirin (via Hailung), the Kirin-Changchun, the Sinminfu-Moukden and the Ssupingkai-Chengchiatun Railways are outside the scope of the joint activities of the consortium.

The foregoing letter of acknowledgement, although written in behalf of the American banking group, has, we are assured, the cordial approval of the British and French banking groups, also of the governments of the United States, of Great Britain and of France.

Pray be good enough to present our regards to your colleagues in the Japanese banking group and our best wishes for the success of the joint four-power undertaking.

Very truly yours,

(Signed) THOMAS W. LAMONT,

For and on behalf of the American Group.

MEMORANDUM COMMUNICATED TO JAPANESE EMBASSY, BY BRITISH FOREIGN OFFICE, MAY 17th, 1920.

His Majesty's government have the honor to acknowledge the memorandum which the Japanese ambassador handed to His Majesty's principal secretary of state for foreign affairs on the 10th instant.

His Majesty's government are much gratified to learn that the imperial Japanese government in recording in point (1) of their memorandum of the 14th April Japan's view in regard to the extension of the Taonanfu-Jehol Railway, were prompted by no desire to put forward any new condition or demand, and they are glad to note that their ally is satisfied that His Majesty's government have no wish to do anything which would conflict with their vital interests. As regards point (2) His Majesty's government are happy to note that it was merely raised in order to set forth the circumstances in which the Imperial government felt the need of the assistance and co-operation of the powers concerned in the actual construction of the railway from Taonanfu to Jehol and thence to the sea. They appreciate the fact that in thus giving a frank expression to their hope, the Japanese government were inspired by no other desire than to make an appeal to the spirit of general co-operation which forms the foundation of the consortium, and which it is hoped will at all times inspire its operations, and that they do not ask for explicit assurances in regard to the two points referred to above.

His Majesty's government are happy on their part to reaffirm the general assurance to which they declared their willingness to subscribe in the memorandum which Lord Curzon sent to Viscount Chinda on the 19th March, to the effect that the Japanese government need have no reason to apprehend that the consortium would direct any activities, affecting the security of the economic life and national defence of Japan, and that the Japanese government can firmly rely on the good faith of the powers concerned to refuse to countenance any operations inimical to such interests.

His Majesty's government gladly note that the Imperial government rely on the friendly spirit in which they have offered to renew their assurance, and they are most gratified to find that, in view of the complete understanding now effected between the

governments concerned in regard to the principles upon which the consortium will operate, the Japanese government are prepared to lend their support to the conclusion of an arrangement between the banking groups and to give it the necessary confirmation.

In conclusion, His Majesty's government would express the hope that the Japanese group will immediately receive the required authorization, in order that the consortium, which promises such great and enduring benefits to all the countries concerned, may be established and set in motion with the least possible delay.

Foreign Office,

May 17th, 1920.

FRENCH GOVERNMENT TO JAPANESE EMBASSY, MAY 25th, 1920.

L'Ambassade impériale du Japon à Paris a bien voulu le 10 de ce mois communiquer au ministère des affaires etrangères une note remise au départment d'etat a Washington par l'ambassade du Japon d'où il résulte que le gouvernement de Tokio, prenant acte des assurances contenues dans la note du départment d'etat en date du 16 Mars dernier et jugeant inutile dans ces conditions l'insertion des clauses spéciales visant la ligne Taonanfu-Jehol et son embranchement vers la mer, se déclare prêt à accorder son appui à la conclusion entre les groupes financiers intéressés de l'arrangement reconstituant le consortium financier en Chine. Le ministere des affaires etrangères a l'honneur de faire savoir à l'ambassade du Japon qu'il s'associe volontiers aux assurances générales fournies par le gouvernment américain. Il est heureux de pouvoir se féliciter avec elle de la conclusion d'un accord qui assure, pour le plus grand bien de la Chine, la collaboration amicale des puissances intéressées.

Japan's Westward Views

From *The Sun*, New York, February 19, 1921

The situation of Japan in the relations of the powers has in it much to interest the house committee on foreign affairs. The attention the committee's members paid an American mining expert, Mr. John Hays Hammond, in his discussion of Japanese tendencies, gave proof of their interest. The views that he expressed would tend to encourage in congress a policy of acquiescence in Japan's expansion in the Siberian mainland.

Thus far the United States has refrained from any course that might imply acceptance of a Japanese policy of acquisition in the adjacent lands of the former Czar. So far as international agreement is concerned, no definitive disposal has been made of the region of Vladivostok and other territory now under Japanese military occupation. No diplomat has ventured to declare the Russian empire defunct; no step has been taken to advertise for heirs and assigns of that empire. But evidently the ancient possessors must soon come to life, or else possessions now merely guarded in the interest of individual inhabitants will pass to other sovereigns.

Vladivostok itself lies just north of the border of Korea, where abuts Japanese territory. Thence for 800 miles and more northeastward extends the Siberian maritime province, an elongated mass spined by a coastal mountain range and contained between the Amur River and the sea. Its coast forms the only limiting shore of the Japan Sea not in the possession of Japan, save for the north end of Saghalien Island—and this might be said to go with it, by dependence and propinquity. The possession of this territory would open to Japan a mineral region holding supplies that it will require. It would turn a once disputed sea at the interior of the circlet of chief Japanese possessions into a naval fastness. It would open the east Siberian interior to the commercial penetration of the merchants of Osaka. Mr. Hammond has seen plainly what advantages all this would bring the Islander of the East.

The question of Russian and local rights in the region remains unsettled. Certainly the United States could not justly recognize any acquisition there which did violence to a superior right. In an area considerably greater than California, Russia has built up a population of only some 600,000. These people, in great part Russian only by allegiance, not by race, even so averaged but two inhabitants to the square mile. Russia, it is true, built the railroad to Vladivostok and thus established a claim by efforts to utilize and develop the country. Much depends on whether Russia can be expected in the reasonably near future to acquire a government competent to hold together its possessions, even the most distant, and protect and maintain its inhabitants.

The Bulwark of Japan

THE *Glasgow Herald* of March 5, ulto, reports a lecture delivered before the Royal Scottish Geographical Society by Professor B. J. Wilden-Hart of Kebel College, Oxford.

"By means of maps Professor Wilden-Hart pointed out the great danger there was to the world of a Russia completely under the domination of Germany. Various captured documents were shown which seemed to prove that Russia has already become far more Germanised than is generally realized. With a great transcontinental power, stretching from the Baltic to Vladivostok, under the sole control of Berlin, there was only one thing lacking to enable such an empire to become master of the world, and that was a fleet. Such a great continental power could hold a pistol at the head of Japan from Vladivostok, and Japan would be either forced to fight overwhelming odds or else agree to throw her lot in with a Germanised Russia and allow her fleet to be used in the carryingout of pan-German ambitions. In order to prevent this great catastrophe the lecturer emphasized the importance of having a complete chain or barrier states stretching from the Baltic to the Black Sea, entirely separating Germany from her intended prey, Russia. That chain of barrier states would include such countries as Esthonia, Poland, Roumania, etc. Slides illustrating the peoples and scenery of these countries were shown, and the lecturer gave a brief outline of the history of each of these states, and said they would have to form a confederation for mutual defence, under the leadership of Poland, whose population was the only protection Europe had against Bolshevik ambitions. Poland would then become not only the bulwark of Europe, but preventing Russia from falling under the domination of Germany, she would also become the bulwark of Japan."

Professor Wilden-Hart evidently failed to give consideration to the determination of the German government to send its surplus population into Russia and Siberia. In this event, the Polish bulwark would prove of little value to either Europe or Japan. Germany in Russia and Siberia means that sooner or later she will dominate the world. Japan, supported by Great Britain, France and America, is the only real check to Germany's ambitious schemes.

Plain Language

***Chicago Tribune*, February 14, 1921**

"If Japan fights and keeps in Asiatic waters, even if it fights alone, with the British merely indifferent to what happens to the United States, the American navy will have to carry the fight to the other end of the world. We may win, but win, lose, or draw we lose. We have nothing to get from a war with Japan but a loss.

"The United States and Great Britain can reduce Japan to insular insignificance if it were necessary and the Japanese know it. The United States alone might do it in the end, but at a cost which would illuminate the world's greatest folly.

Japan is a menace. It is a needless one. It is a menace because the United States is behaving as a fool. America is doing everything that it ought not to do and nothing that it should, and it will wake up some day to find twenty-four packs of cards up Japan's sleeve."

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MAY, 1921

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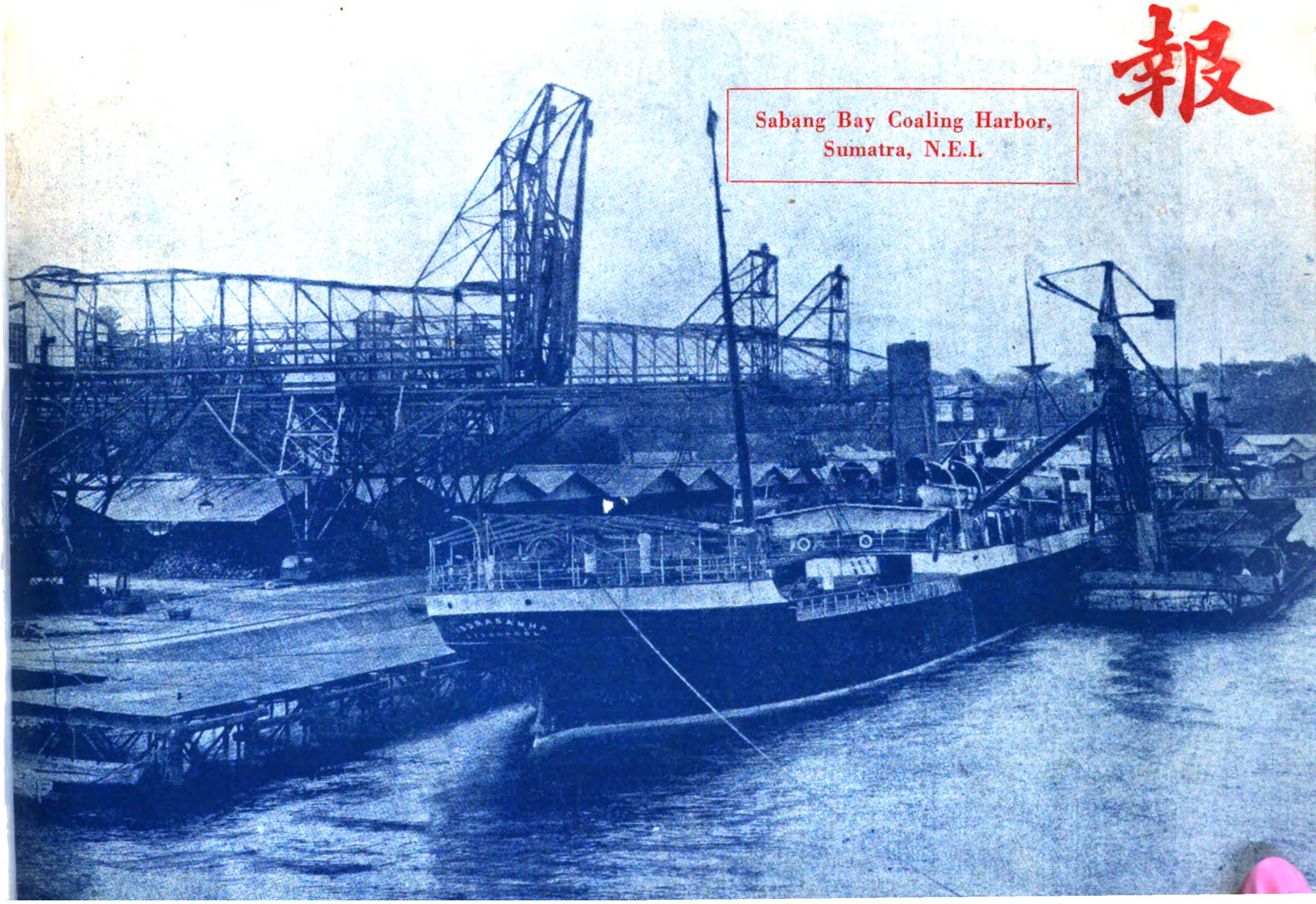

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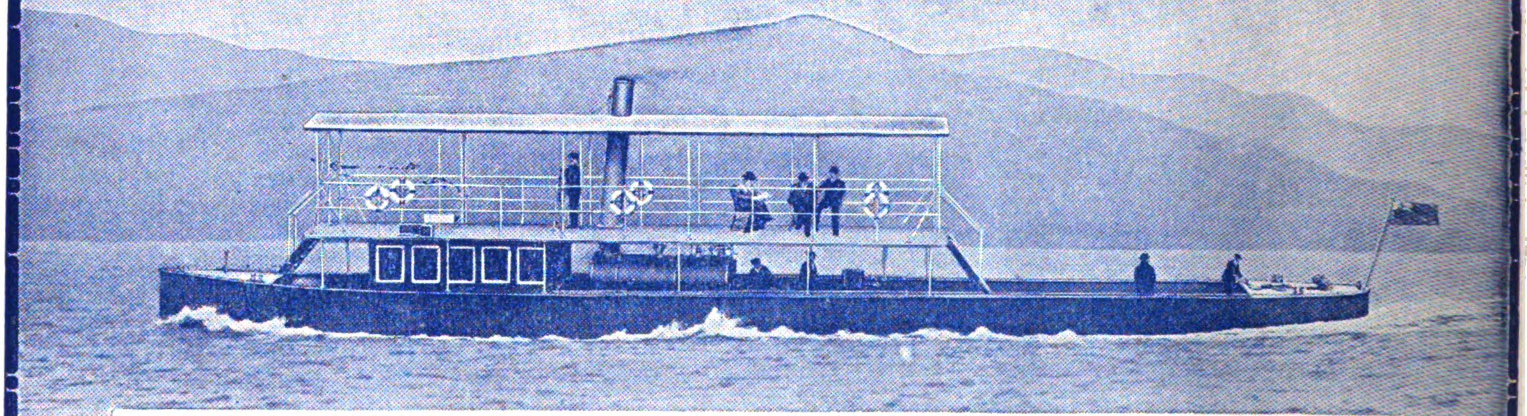

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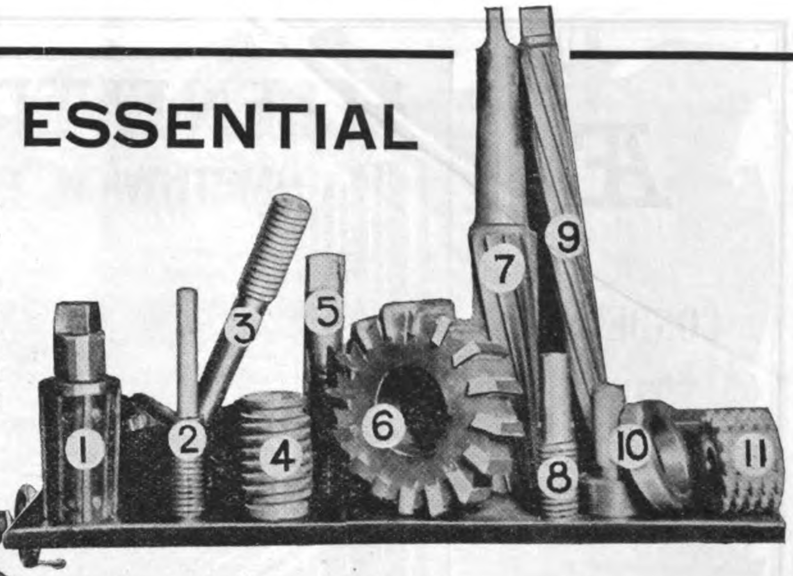

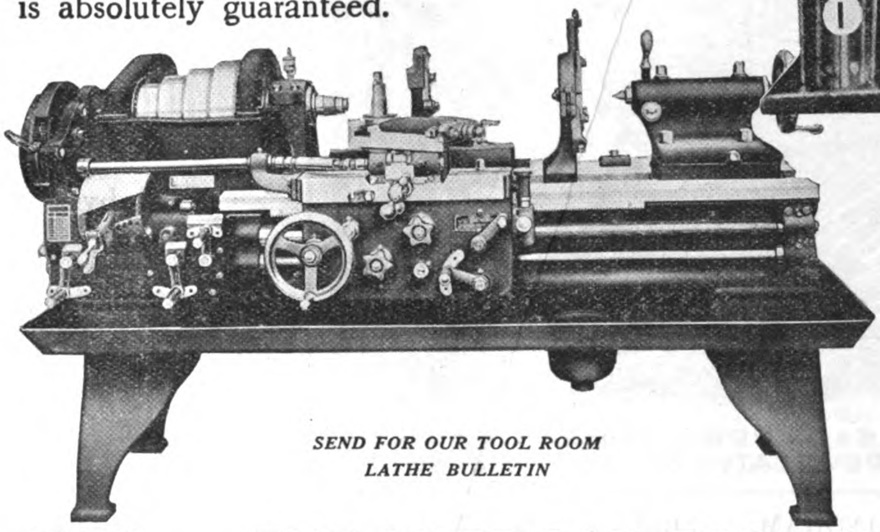

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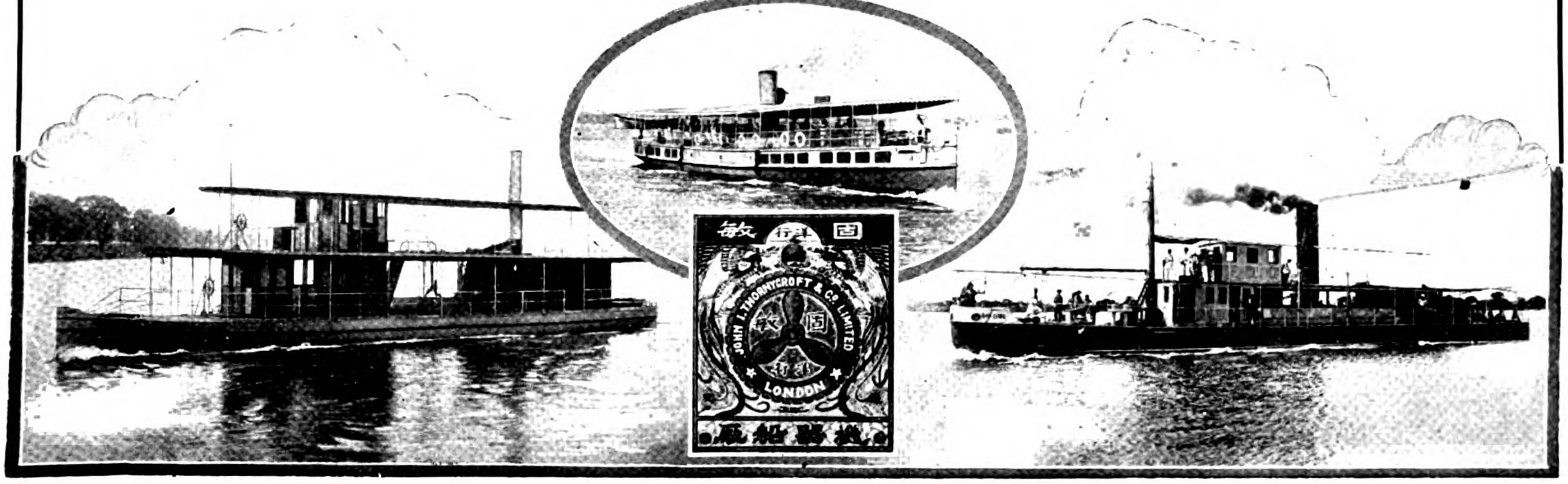

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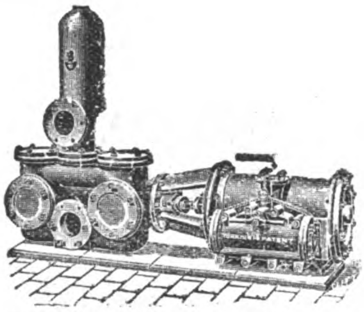

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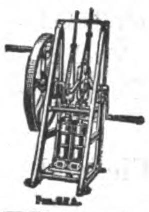

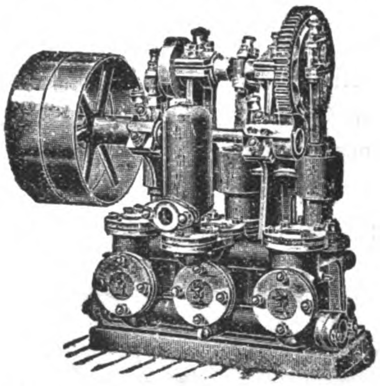

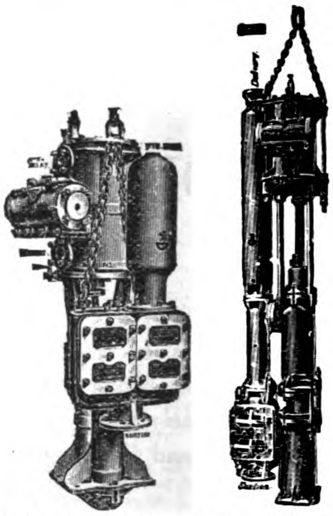

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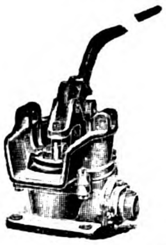

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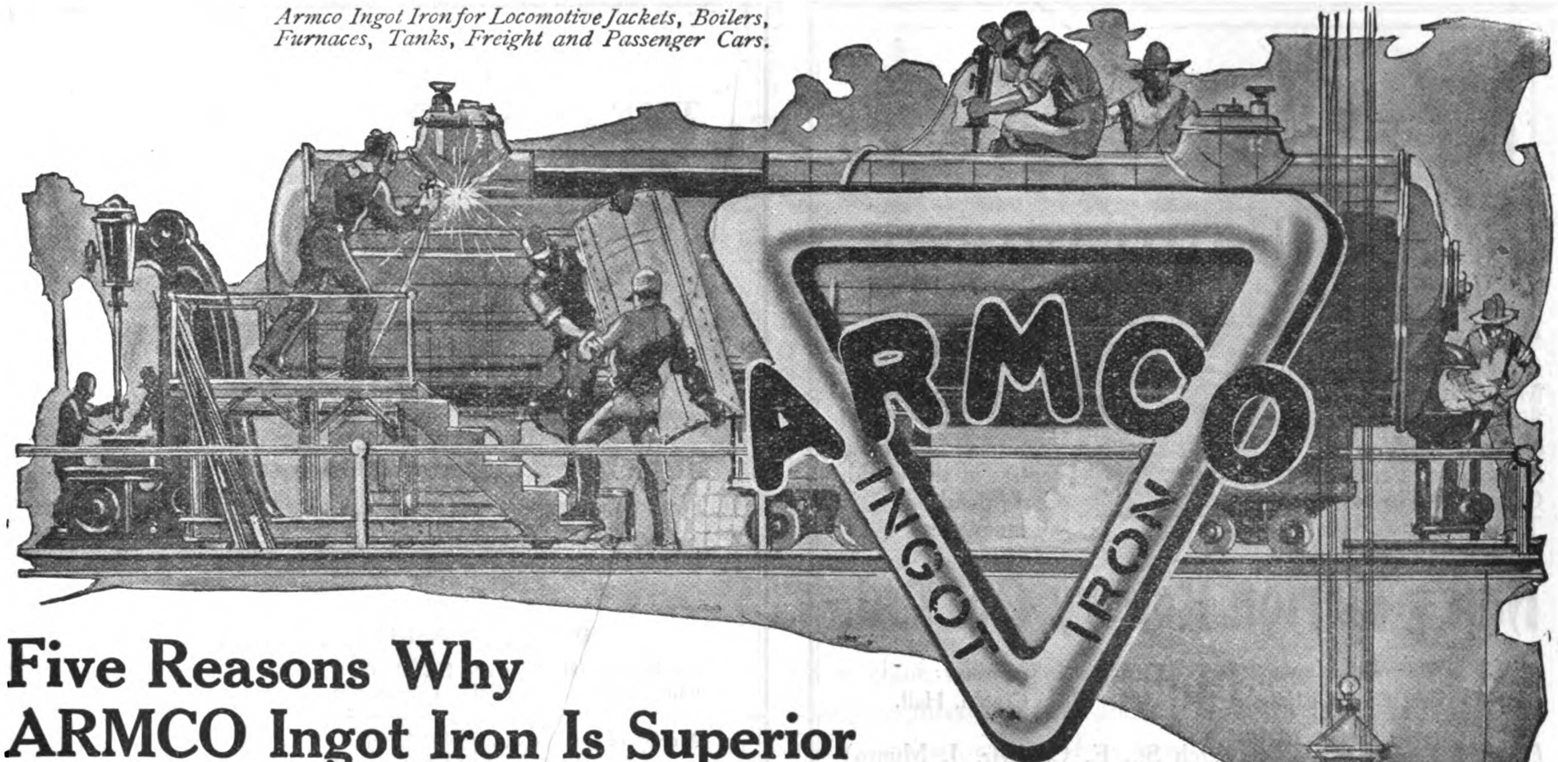

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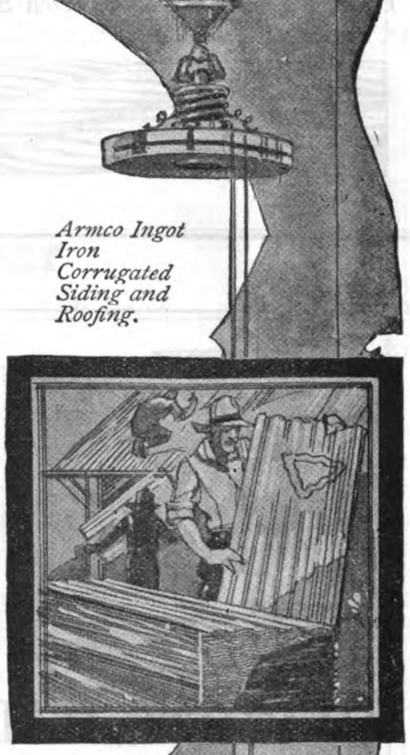

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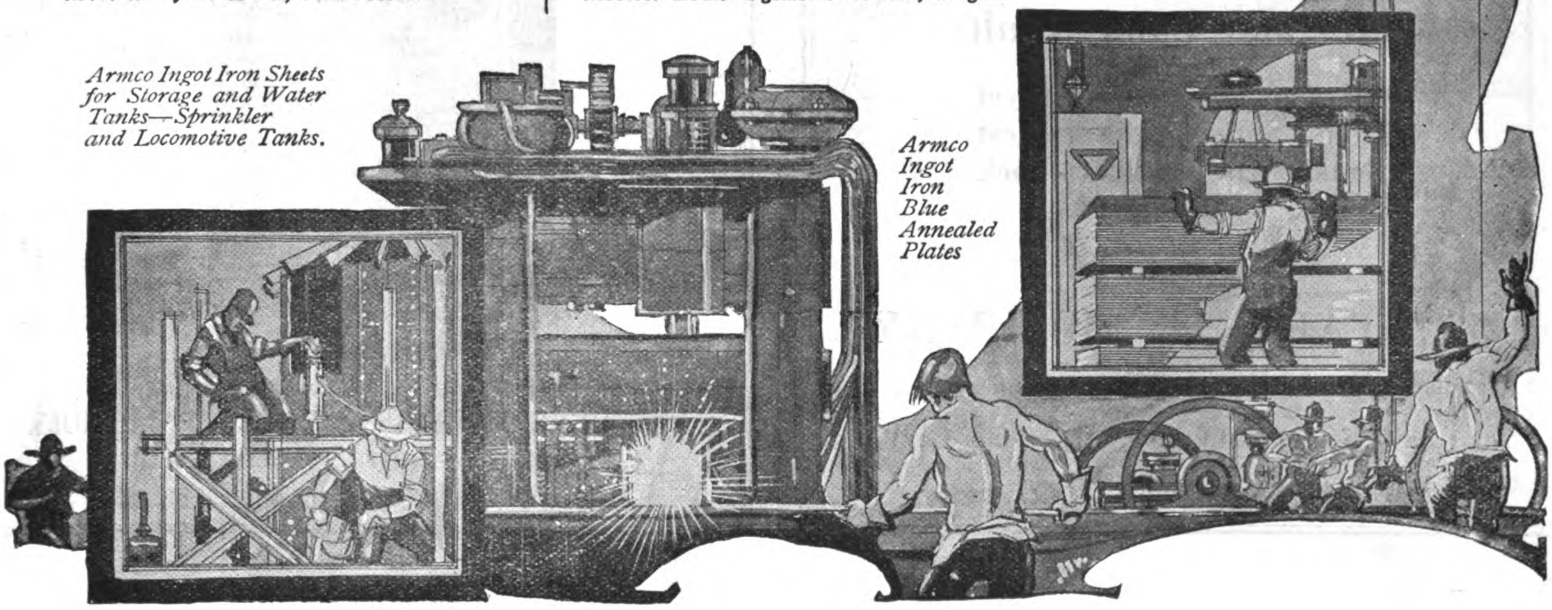

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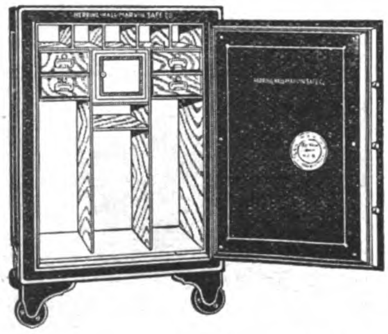

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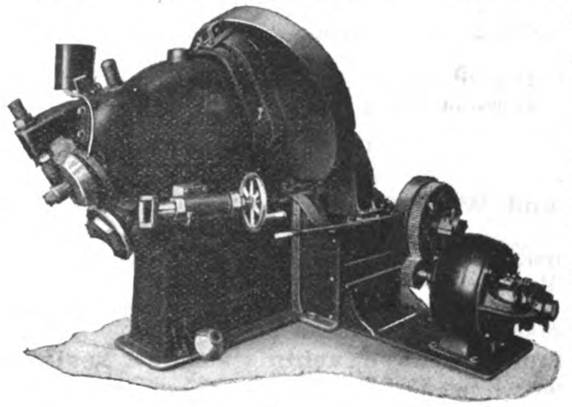

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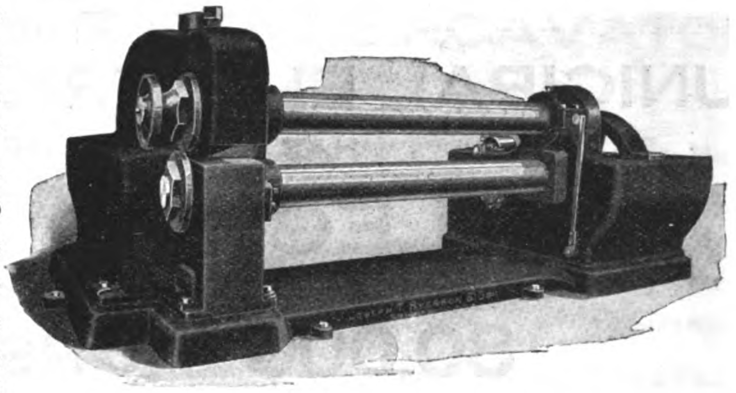

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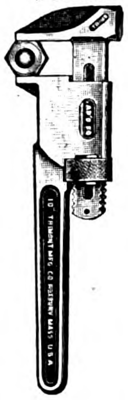

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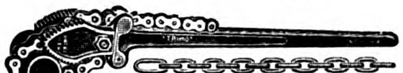

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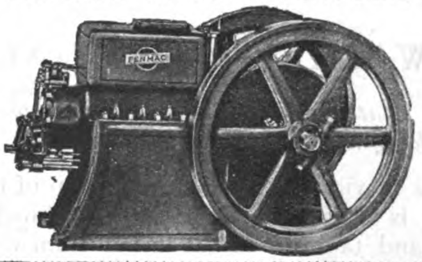

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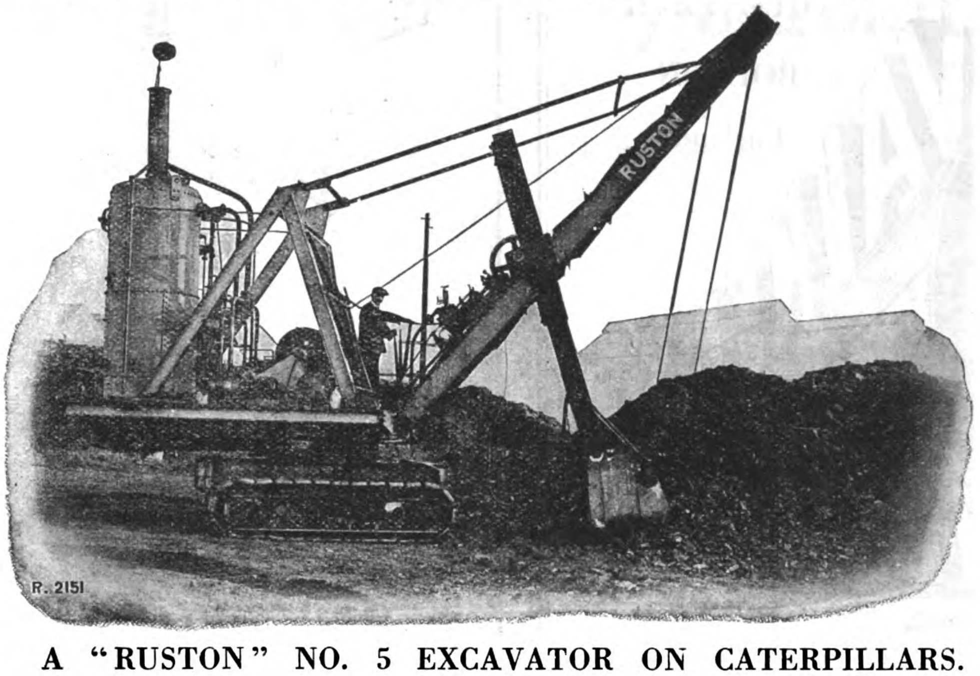

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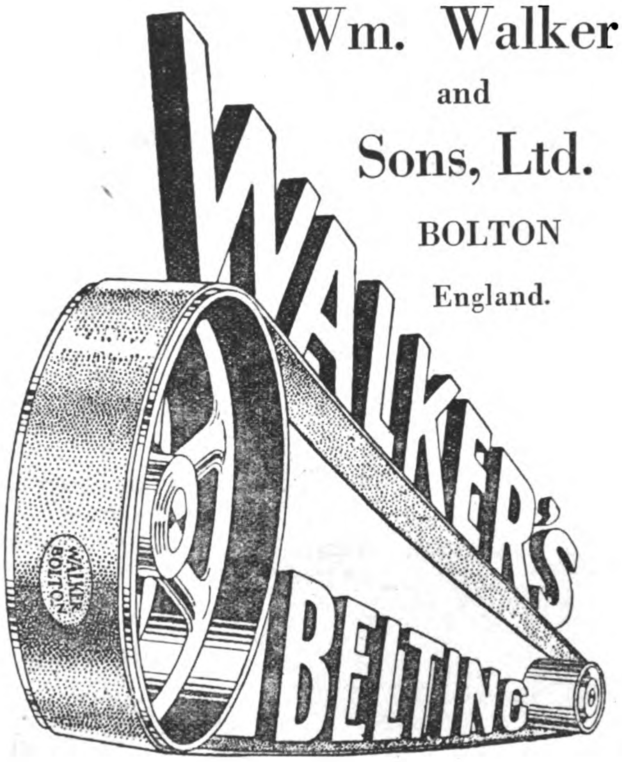

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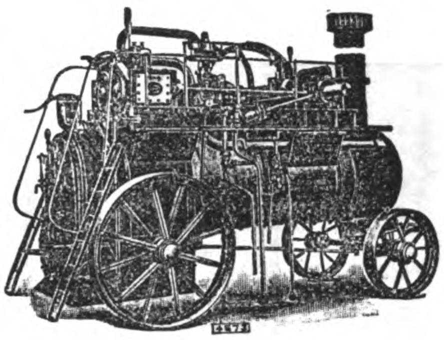

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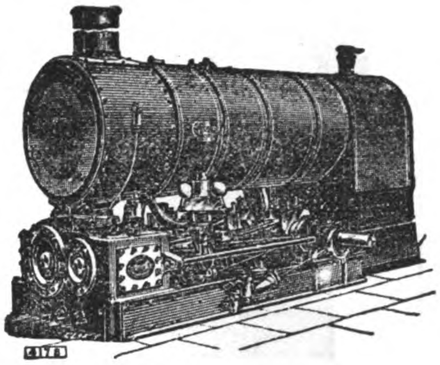

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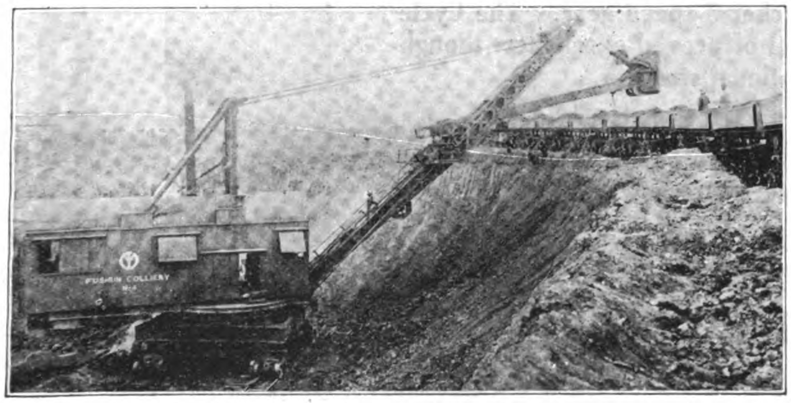

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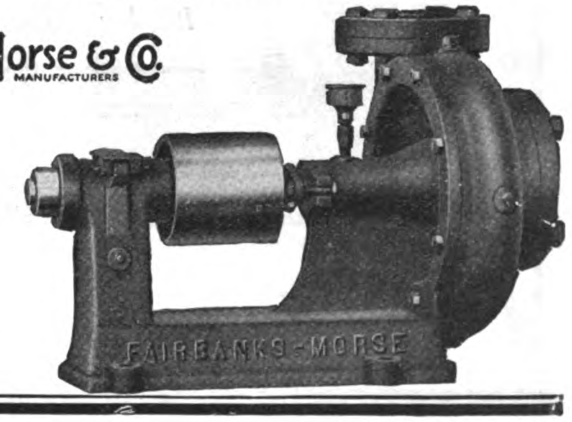

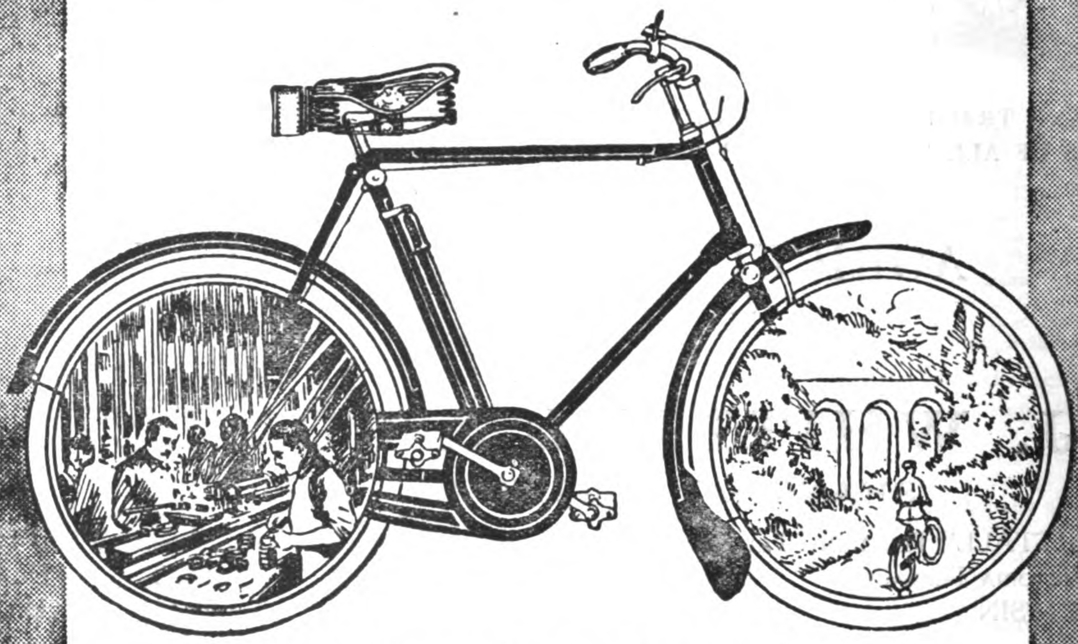

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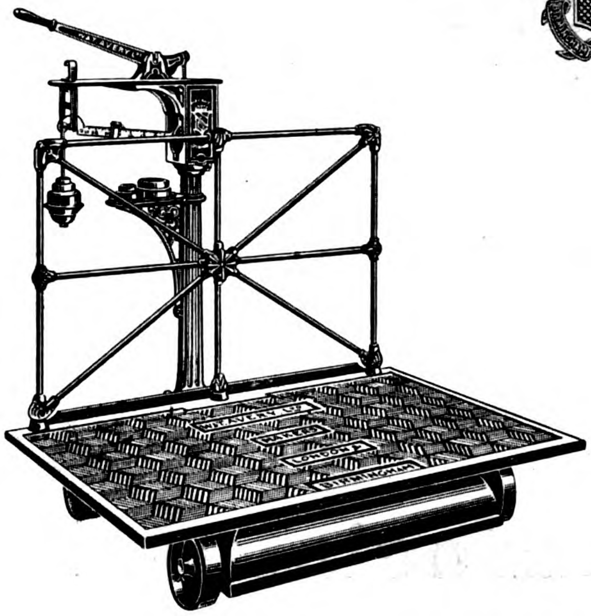

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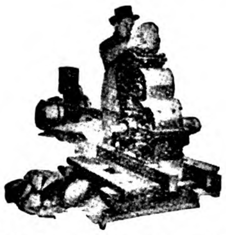

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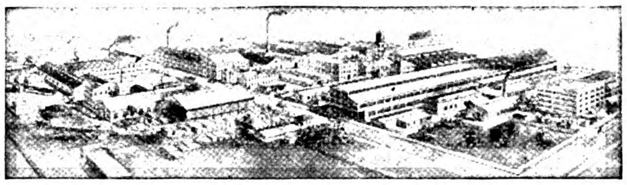

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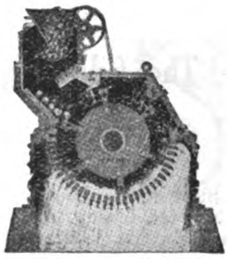

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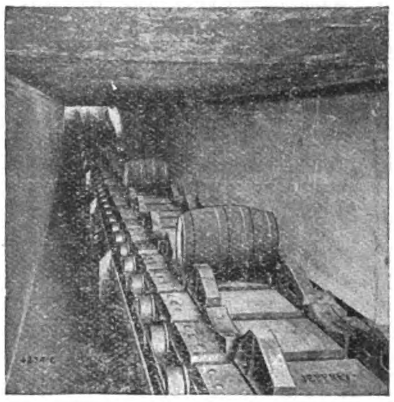

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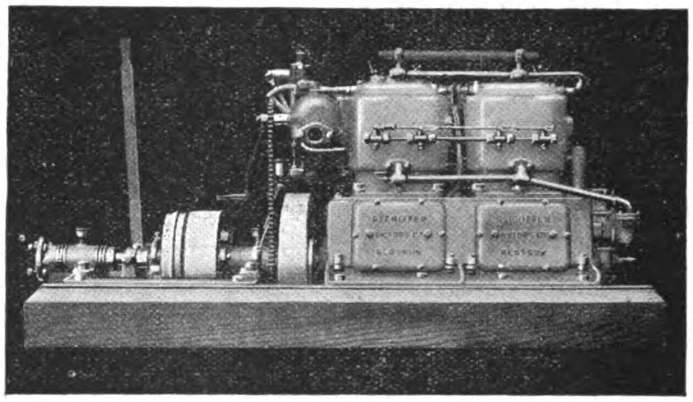

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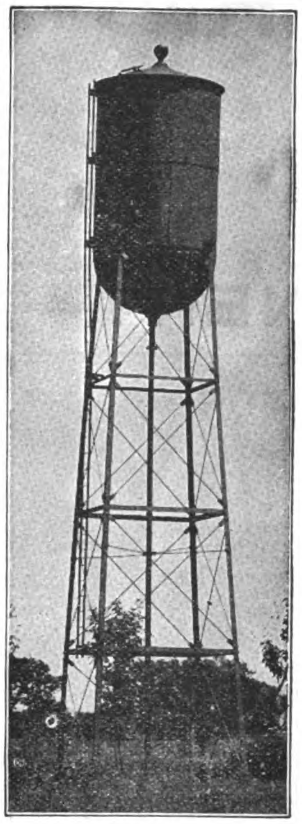

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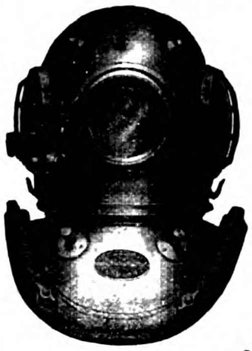

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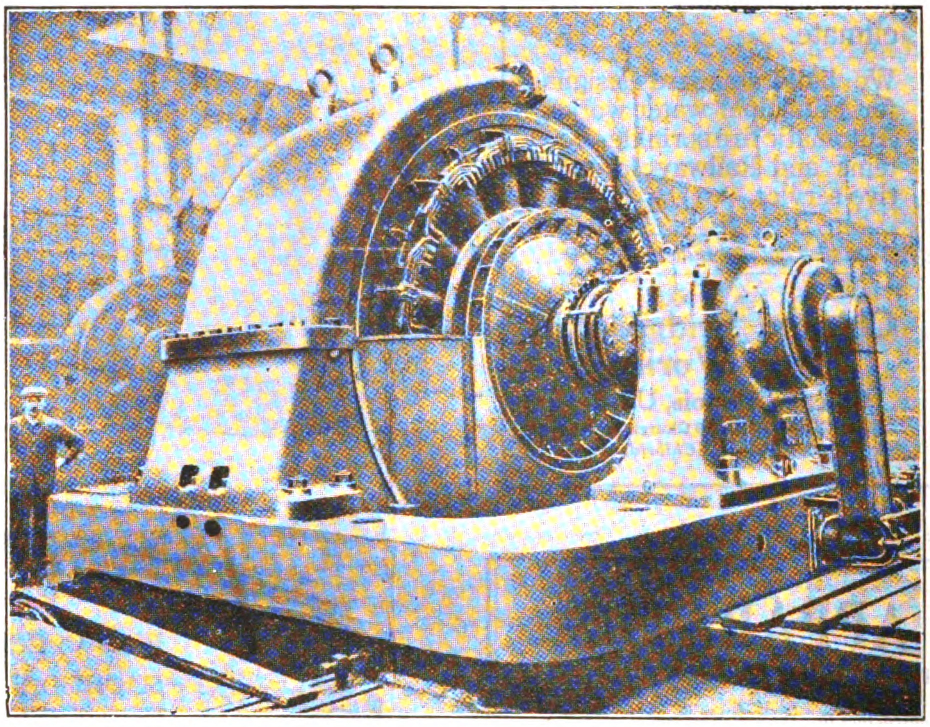

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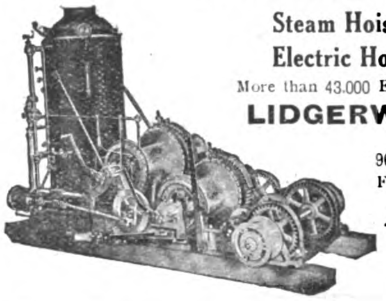

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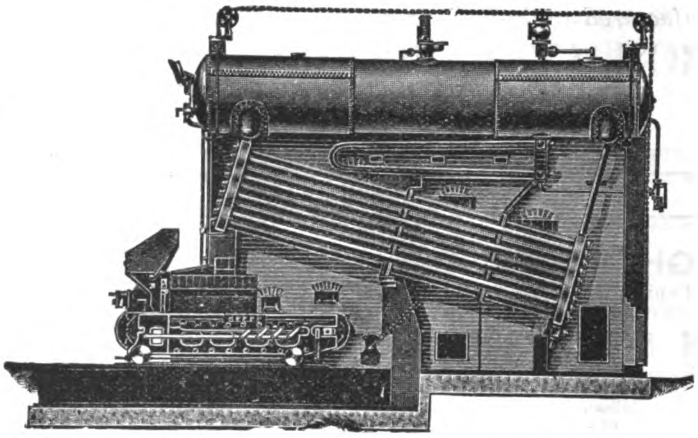

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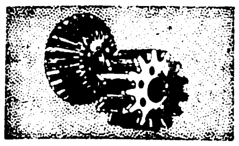

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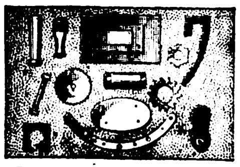

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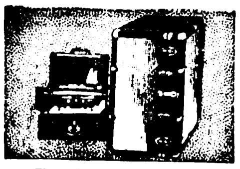

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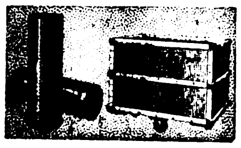

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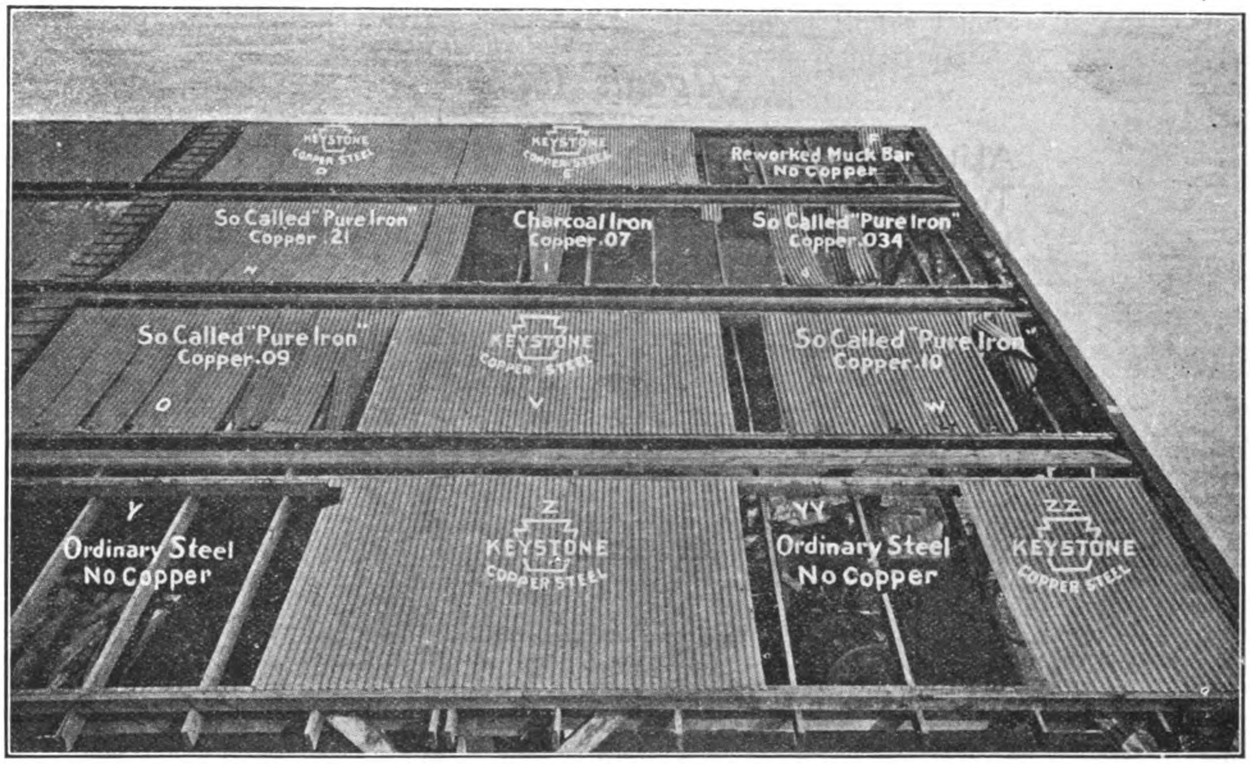

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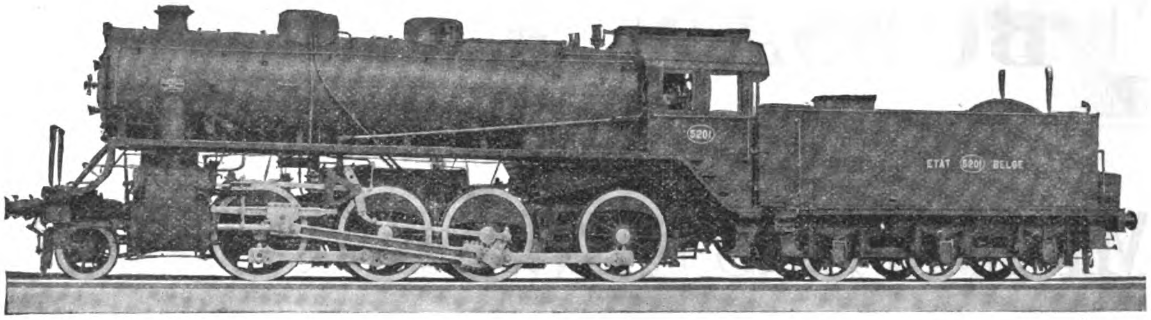

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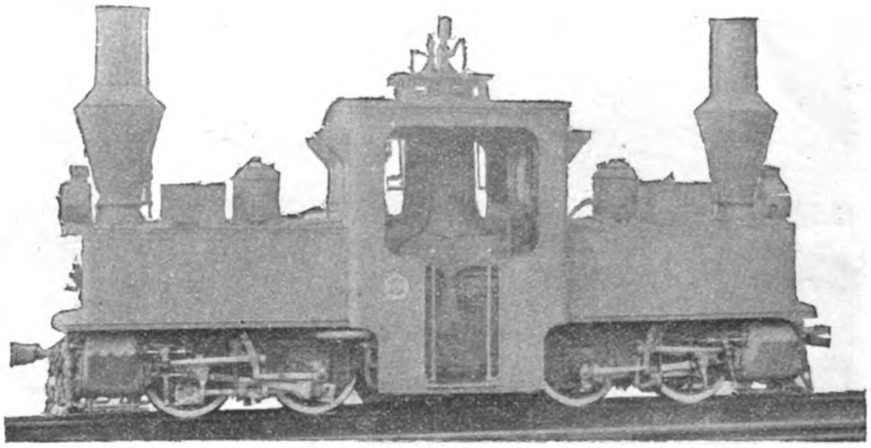

Gauge 60 centimeters. Cylinders 175 × 240 millimeters. Working pressure 12 Kg. per CM2. Fuel, coal. Copper fire box. Brass boiler tubes Rigid wheel base, 90 centimeters.

THE locomotive illustrated was ordered by the Japanese Government for experimental purposes. It is similar in construction to 260 locomotives ordered by the French Government, known as the Pochot Type.

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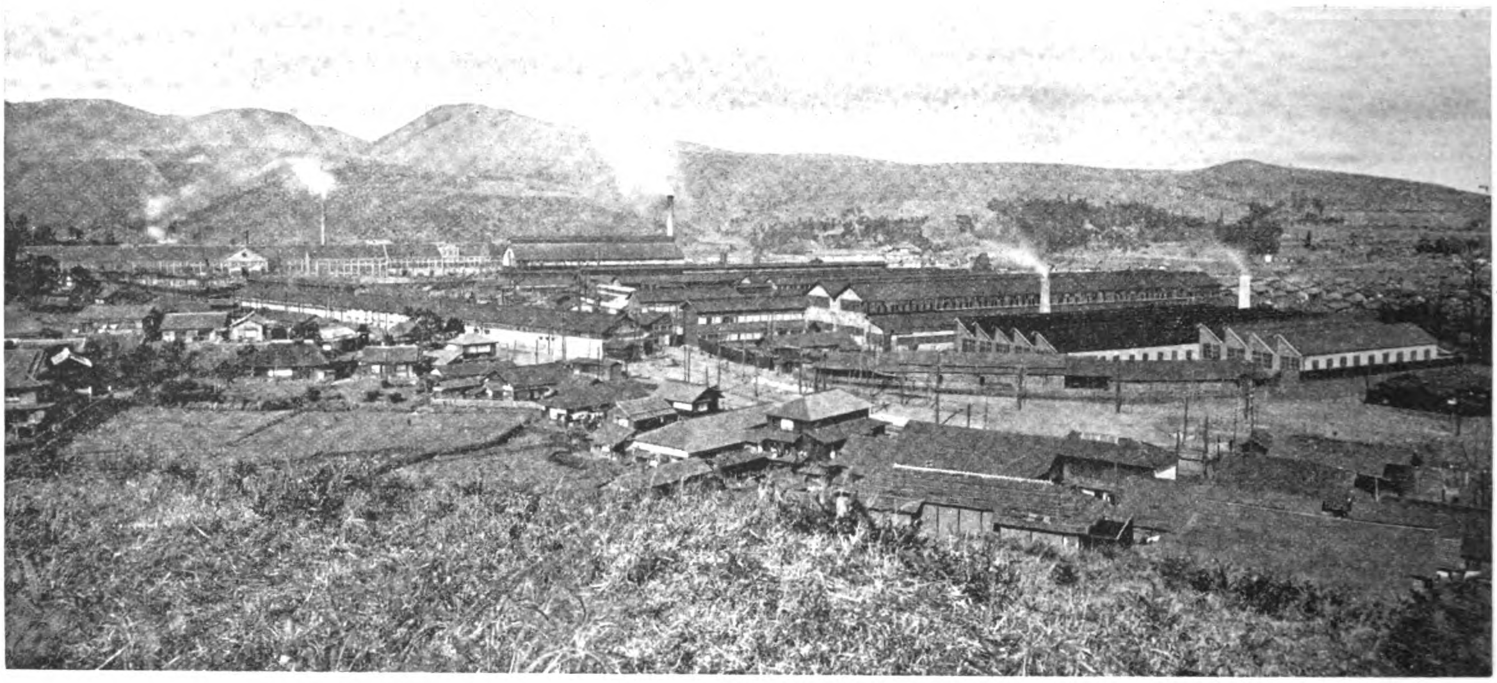
HIDACHI ENGINEERING WORKS



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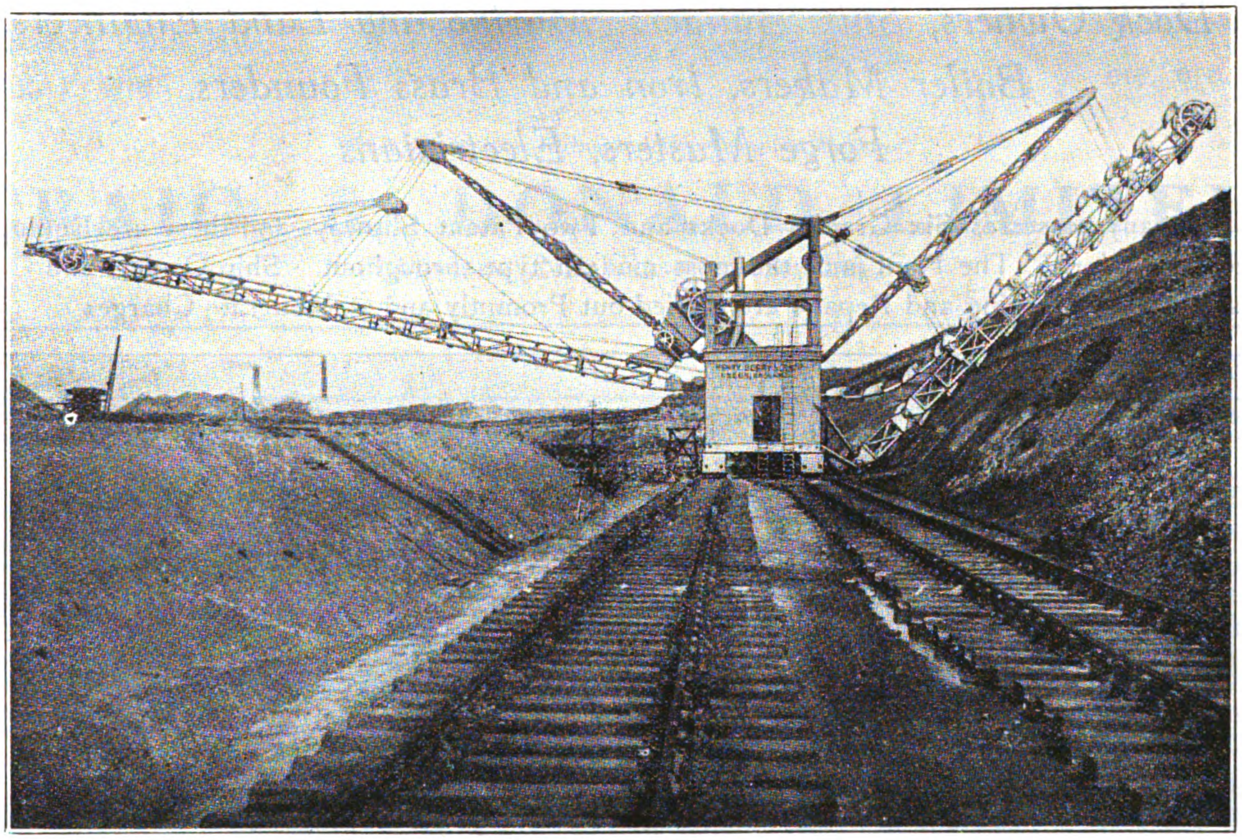

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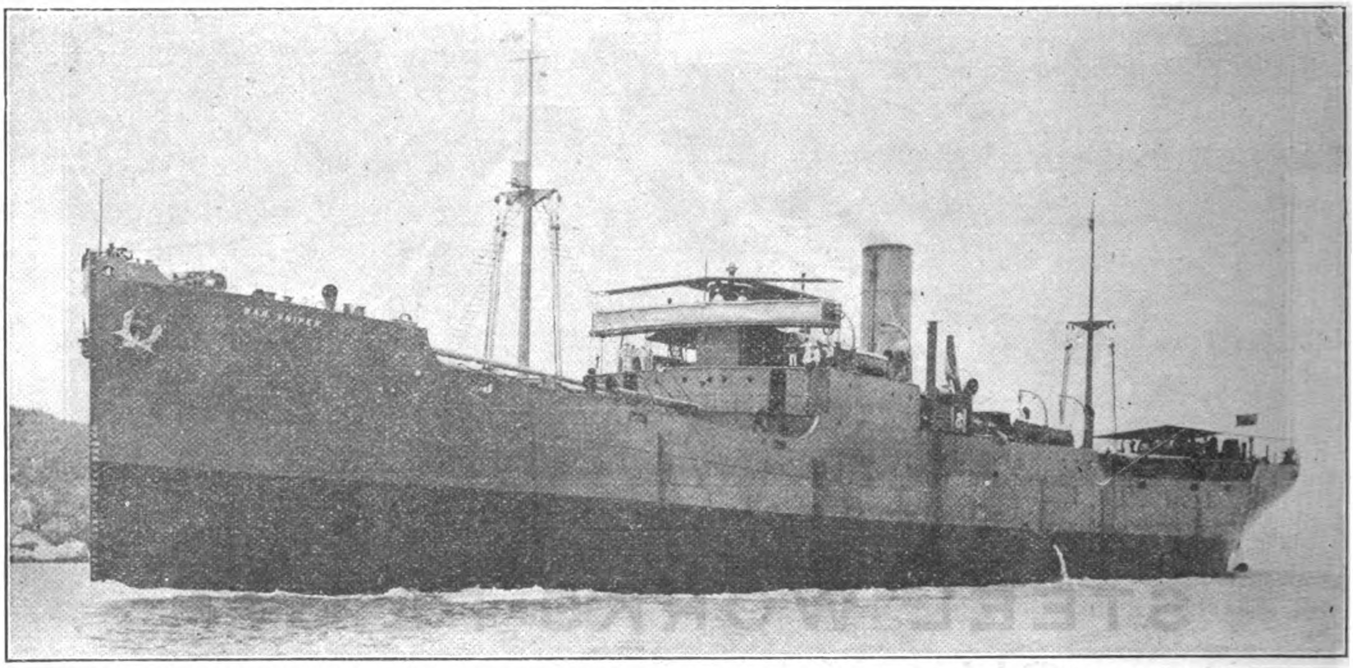

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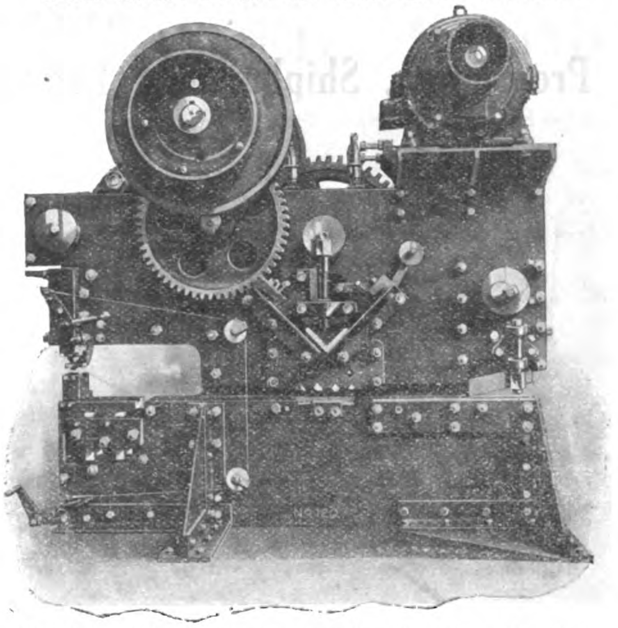

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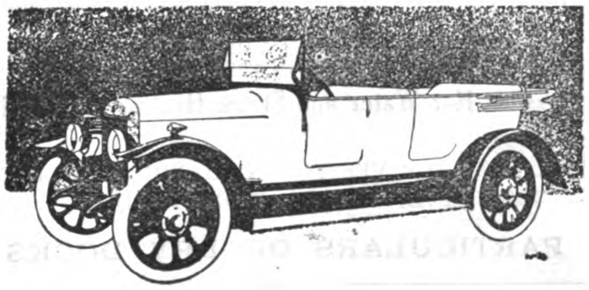

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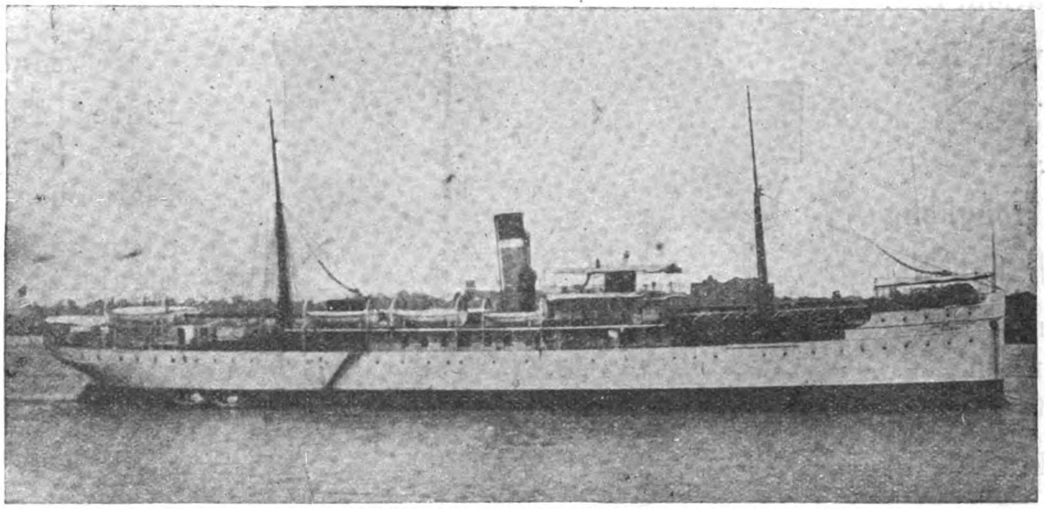

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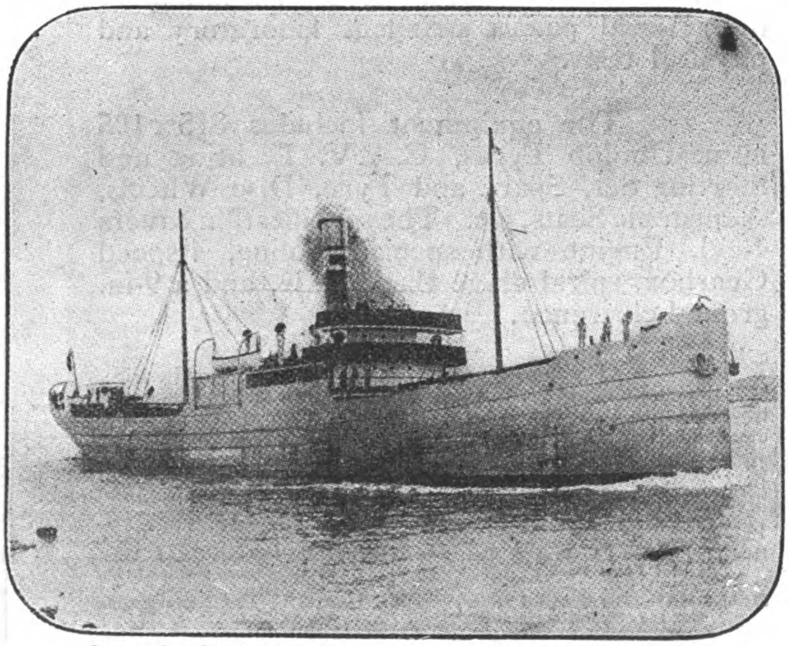

One of Six Steel Cargo Steamers presently under construction.

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International Dock ...	528 ,,	77 ,,	23 ,,
New Dock	450 ,,	74 ,,	21 ,,
Old Dock	399 ,,	53 ,,	16 ,,
Tunkadoo Dock ...	350 ,,	67 ,,	16 ,,

Berths for Building Steamers up to 10,000 tons Deadweight Capacity.

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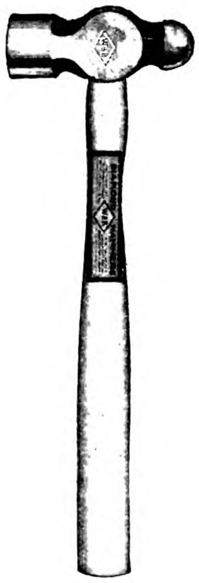

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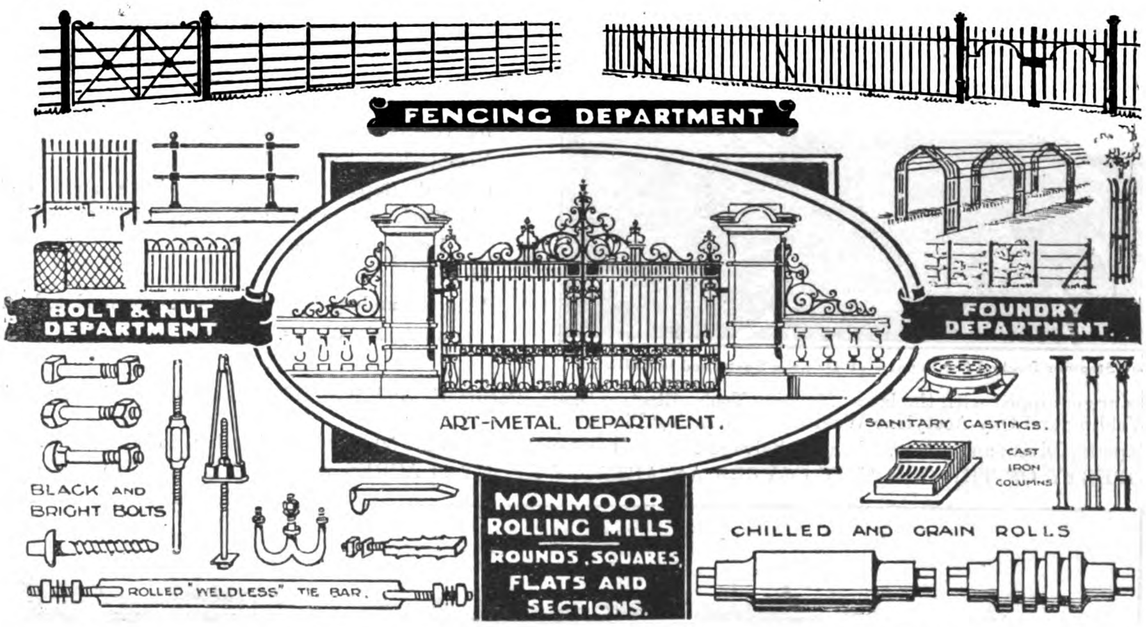

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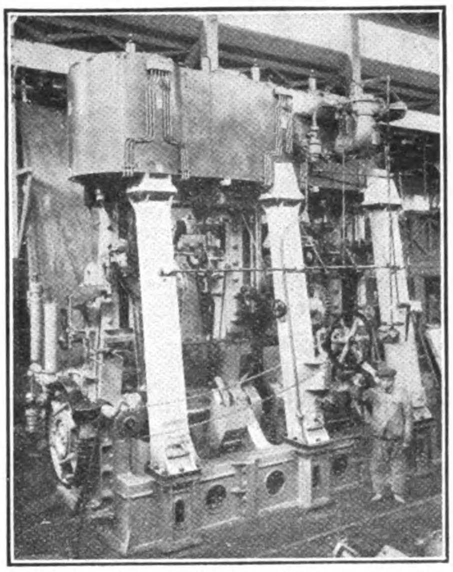

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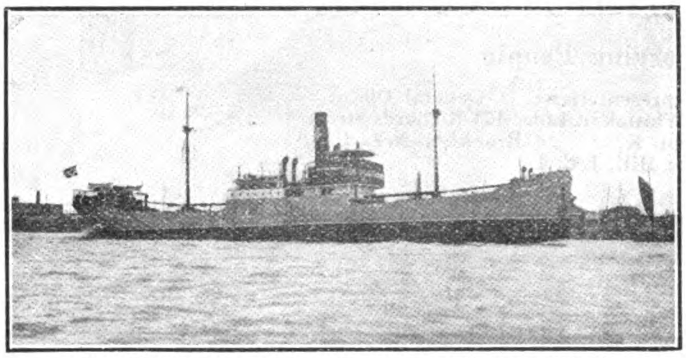

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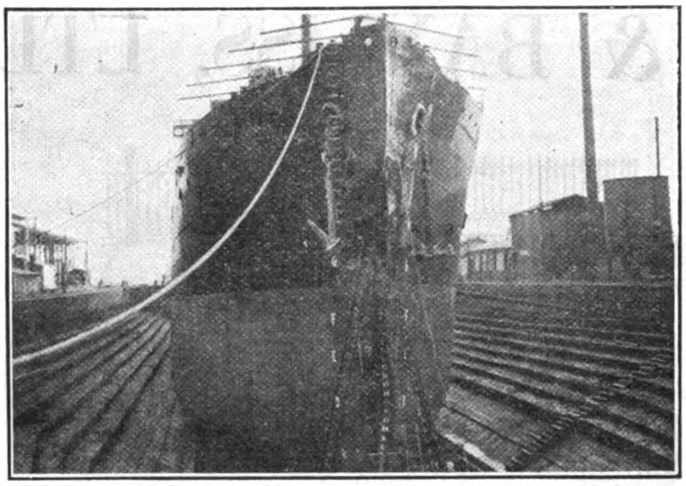

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Vessels docked promptly

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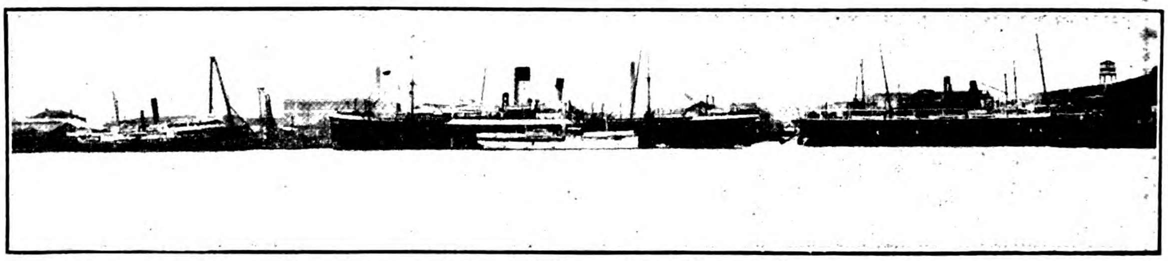

General View of Works from River Side

Showing 8 Steamers Berthed Alongside Undergoing Repairs.

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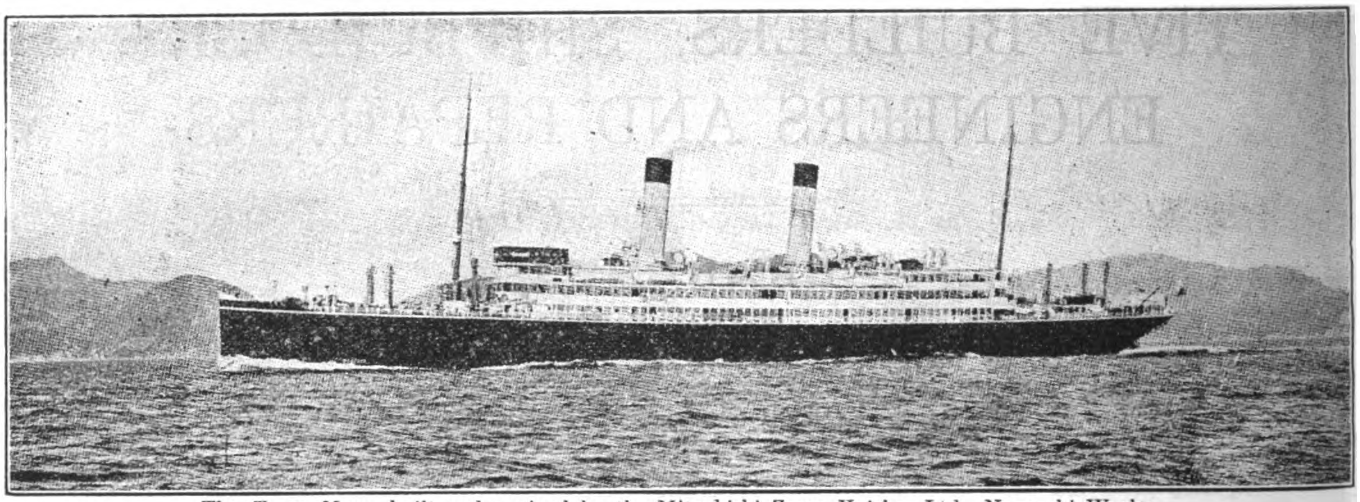

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Length on Blocks	513	,,	Length on Blocks	350	,,	Length on Blocks	714	,,
Width of Entrance on Top	89	,,	Width of Entrance on Top	66	,,	Width of Entrance on Top	99½	,,
,, ,, ,, ,, Bottom	77	,,	,, ,, ,, ,, Bottom	53	,,	,, ,, ,, ,, Bottom	88½	,,
Water on Blocks at Spring Tide	26½	,,	Water on Blocks at Spring Tide	24	,,	Water on Blocks at Spring Tide	34½	,,

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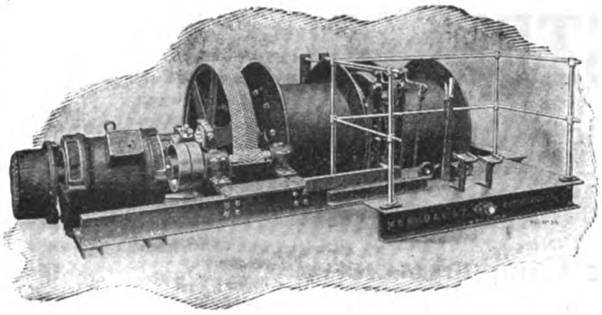

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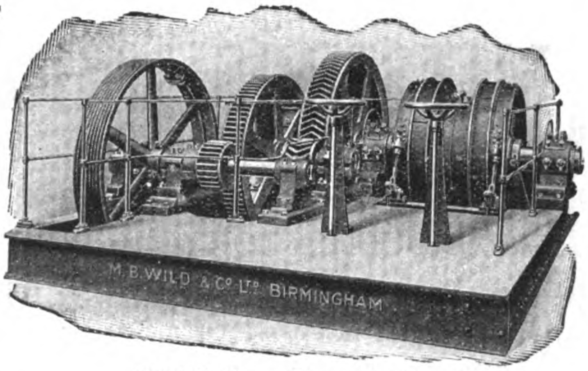

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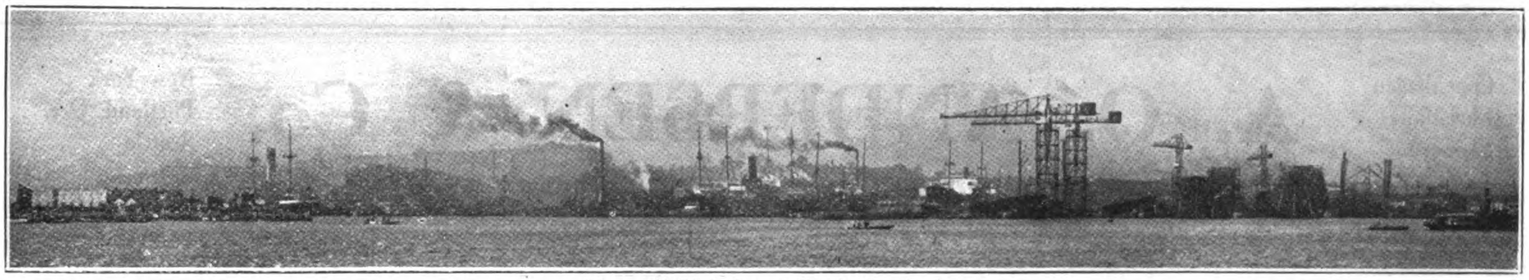

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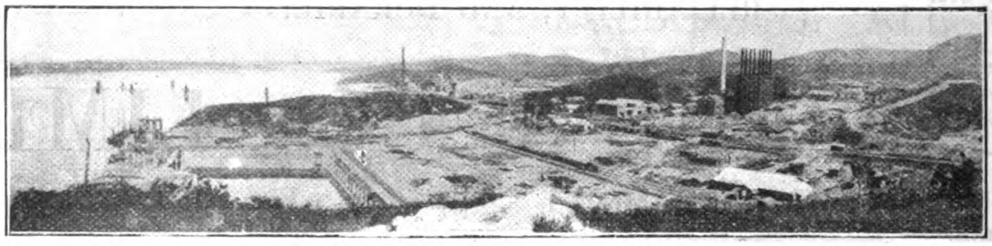

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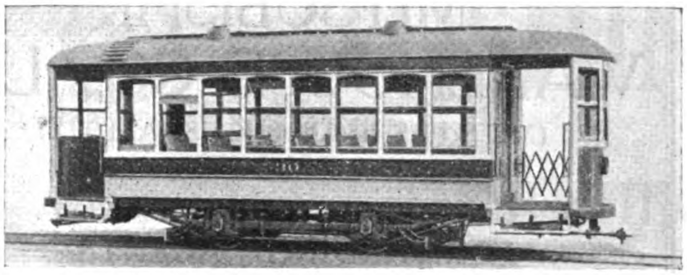

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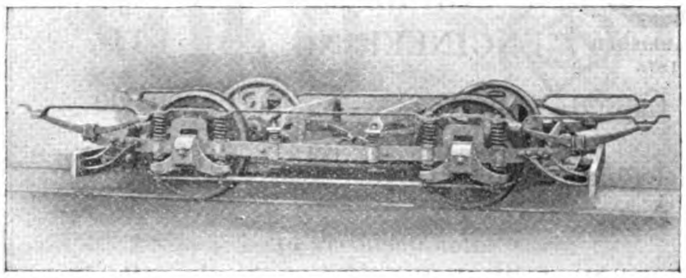

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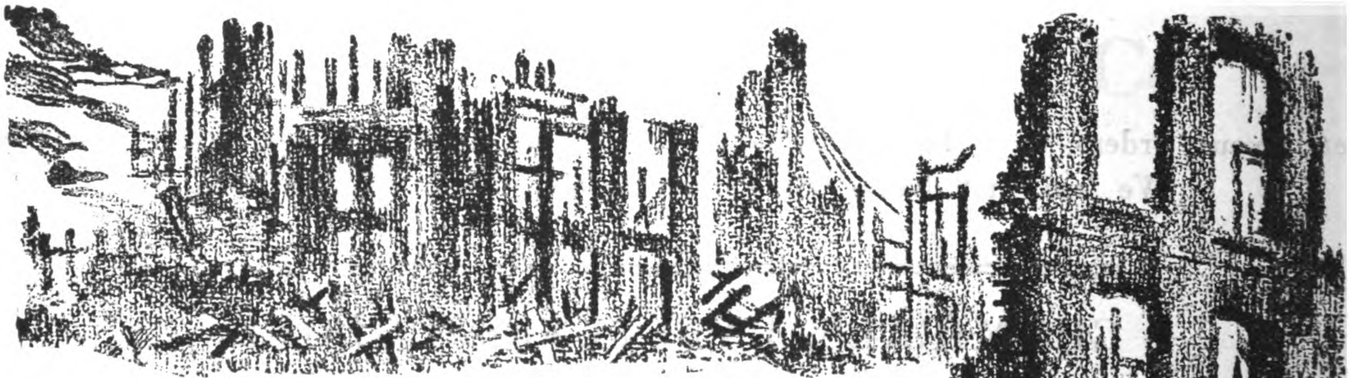

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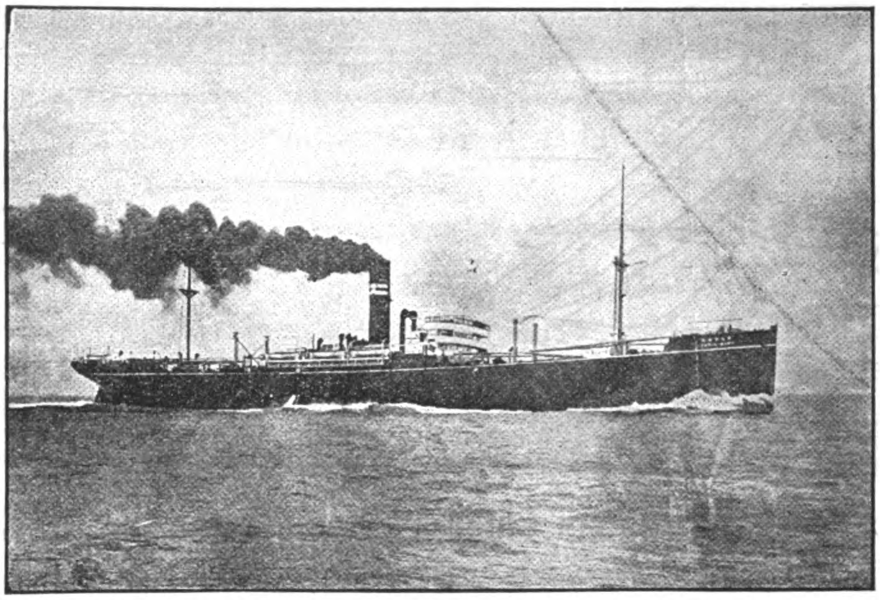

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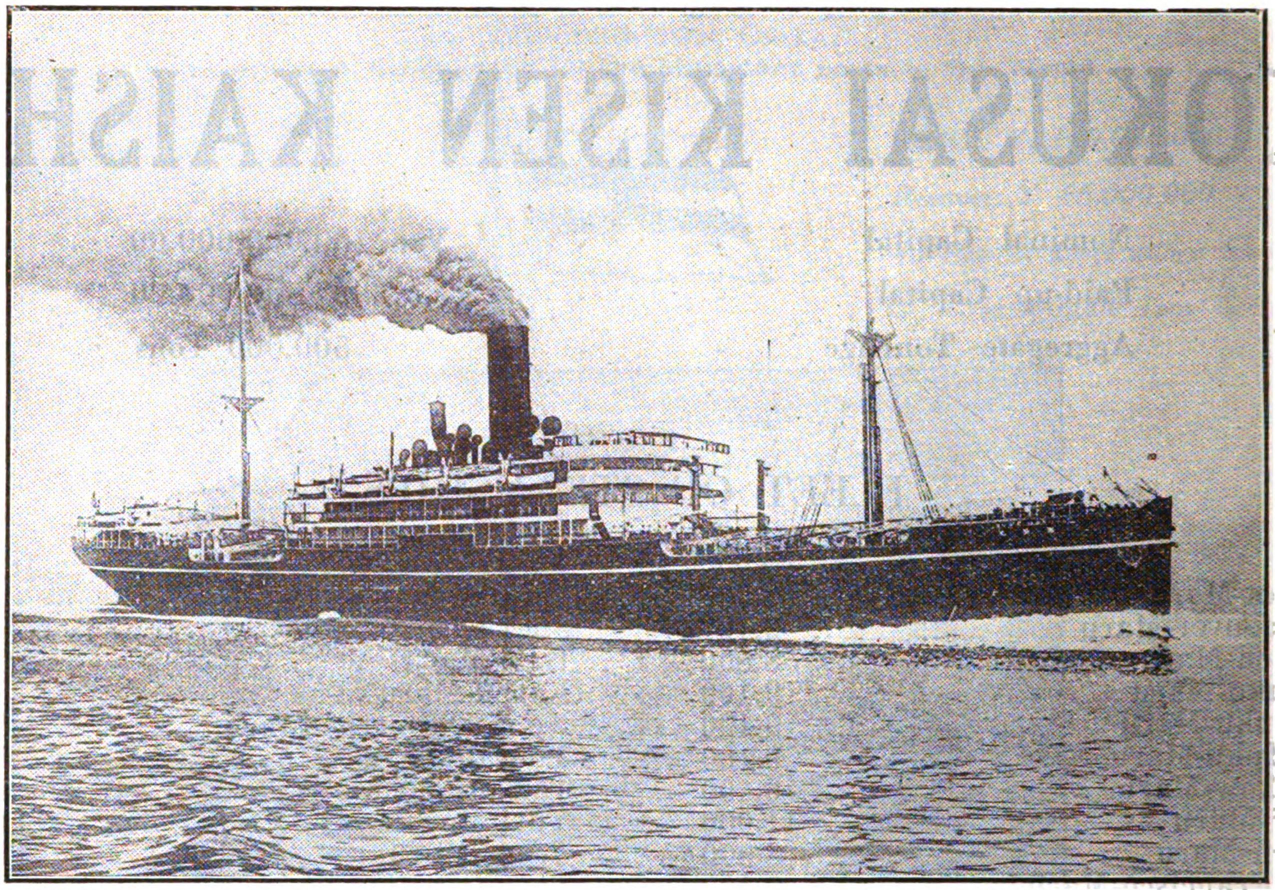

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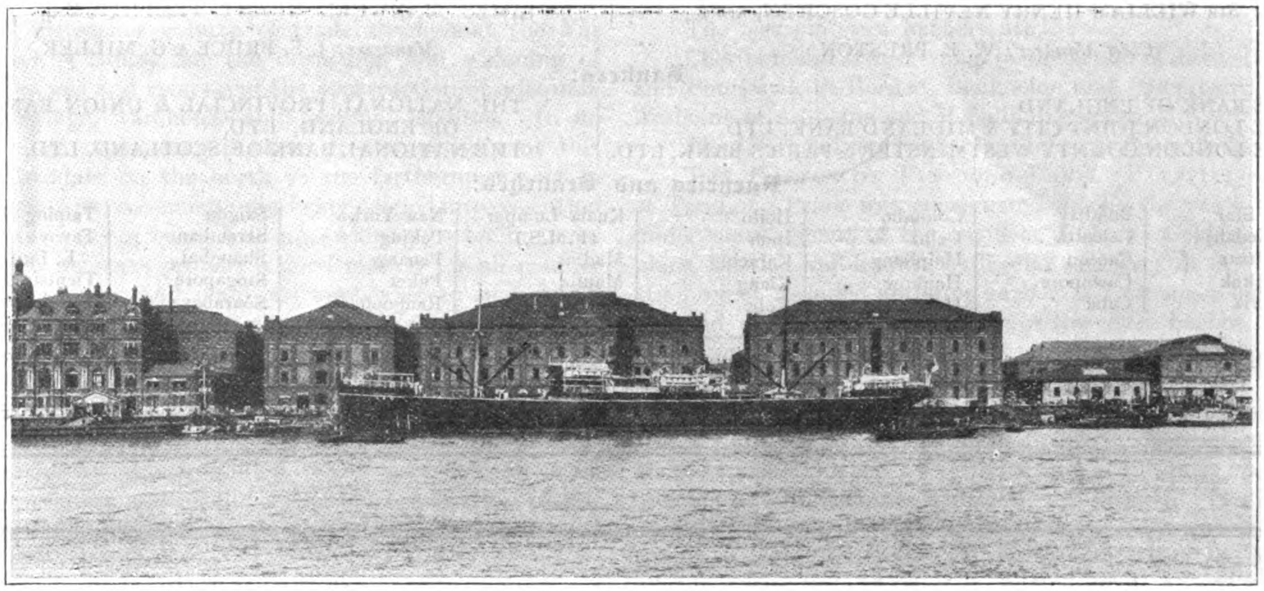

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

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Harbor Improvements in the Netherlands East Indies

THE increasing volume of trade throughout the Far East is calling for the deepening and widening of channels and rivers and the construction of adequate wharfage, warehouse and terminal facilities. In no line of engineering is there greater activity at this time. From Hakodate on the north to the farthermost port in the South Seas great improvements are being carried into execution while grander schemes are being held up awaiting better financial conditions. These schemes provide a good market for all manner of machinery, appliances and materials applicable to such work. Nowhere in the East is there greater activity in this line than in the Netherlands East Indies, where the Dutch (past masters in training the waters of river and sea to do their will) are busy constructing appropriate gateways to their wonderland and paradise under the equator. The works are carried out under a director, generally an engineer, who is guided by a harbor committee. Propositions for supplies and machinery are first submitted to this committee, whose opinion must attach to the plans, etc., presented to the engineer.

The harbors of the Netherlands Indies under government management are divided according to the volume of imports and exports into *(a)* large harbors, *(b)* medium-sized harbors, *(c)* small harbors.

Ad. *(a)* The *large* harbors (seven in number) are: Island of Java: Tandjong Priok (Batavia); Sourabaya; Semarang; Tjilatjap; *Sumatra.* Belawan-Deli (Medan); Emmahaven (Padang); *Celebes:* Macassar.

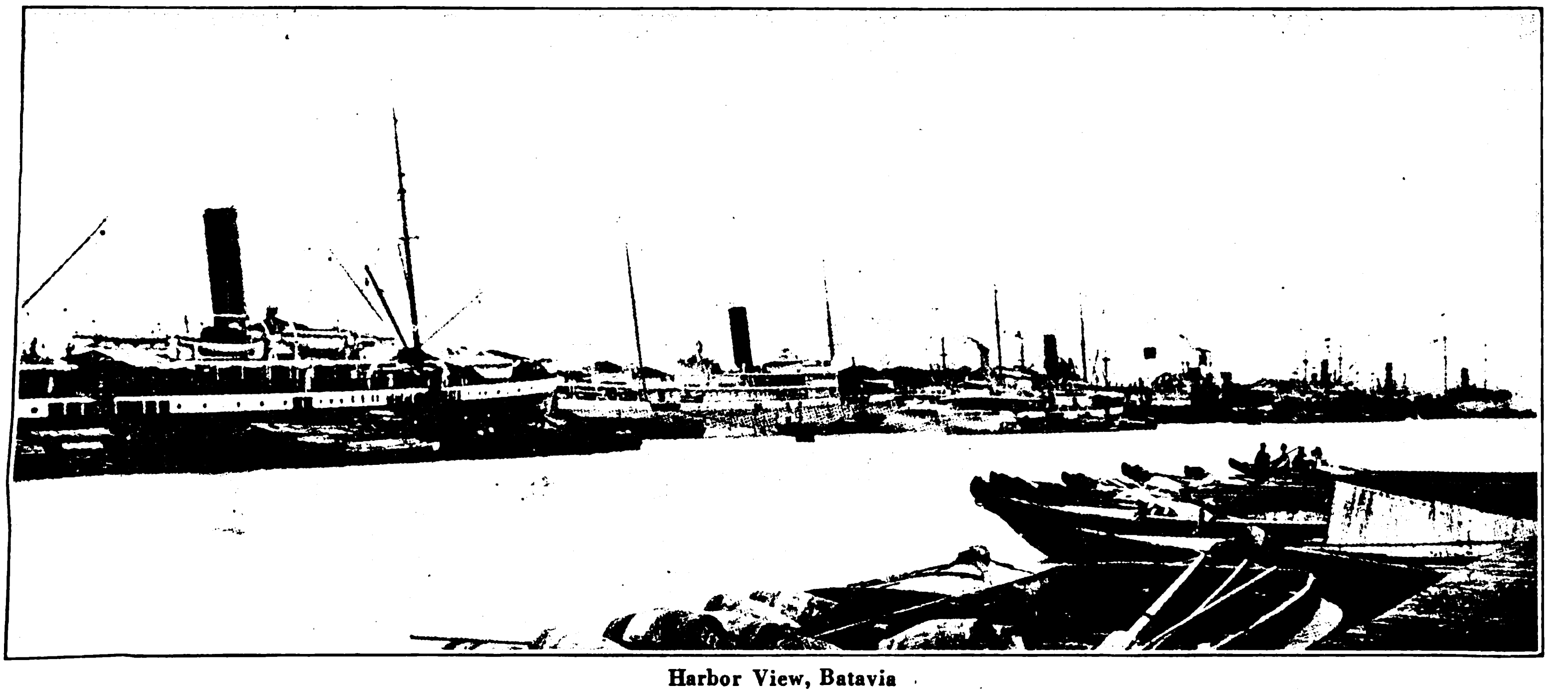
The *medium sized* harbors are:

Cheribon and Banjoewangi in the island of Java, Bandjermasin and Pontianak in Borneo, Benkoolen and Palembang in Sumatra, Amboina in Amboina and Menado in Celebes.

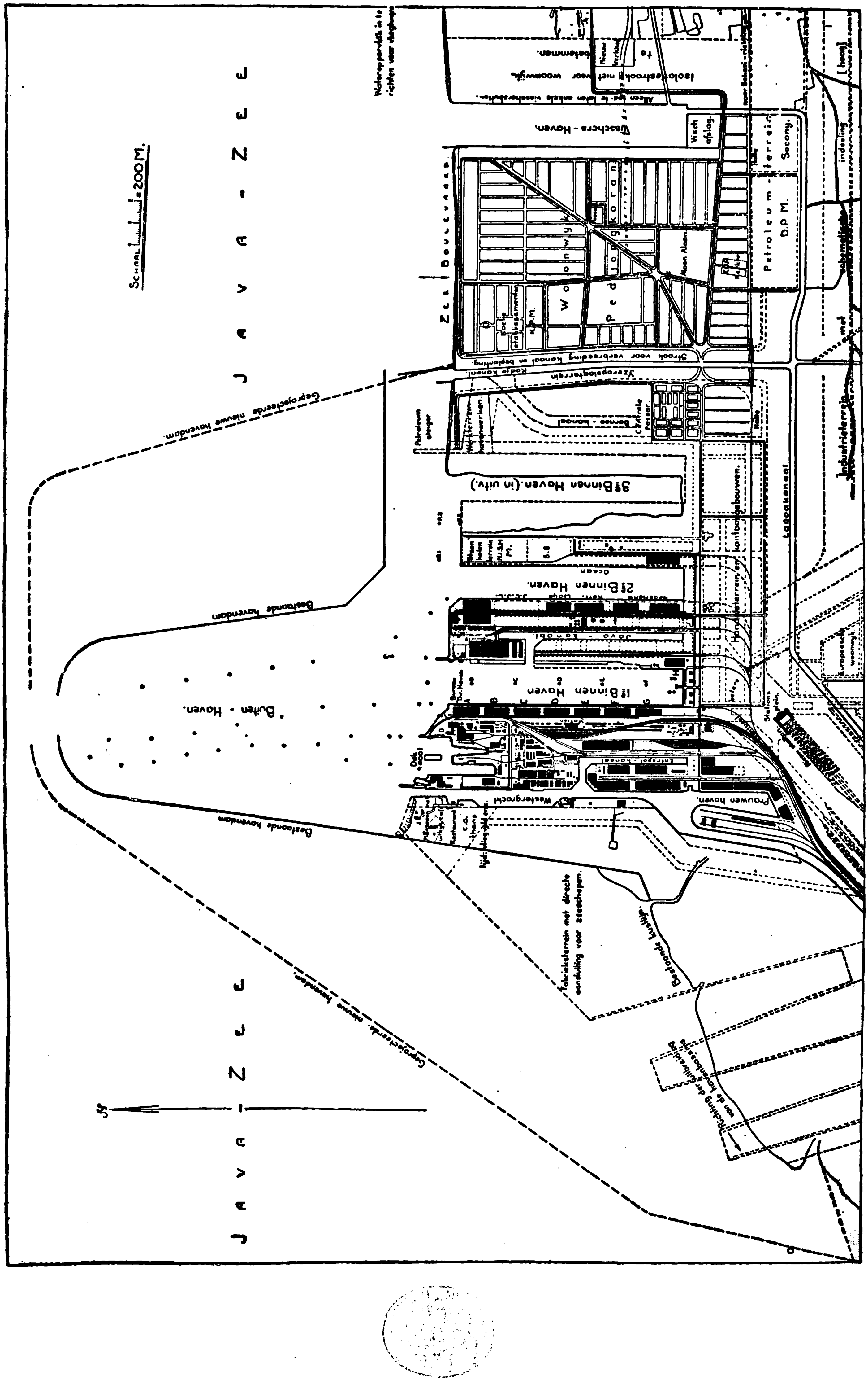
The 450 remaining harbors make up the so-called small harbors.

THE HARBOR OF TANDJONG PRIOK (BATAVIA).—The harbor at Tandjong Priok was constructed during the years 1877 to 1883 under management of the engineer J. A. de Gelder, according to plans by the well-known hydraulic architect J. A. A. Waldorp. His project included an outer harbor and an inner basin, which is situated to the east of the axis of the outer harbor, wherein the plan was to construct eventually a necessary second inner harbor to the west side. The front harbor, 140 H.A. in size, had a width of 1,127 M. at the base and a length of 1,740 M., measured over the axis. Both the piers, stonepiles of simple construction, were 1,765 M. and 1,963 M. long, converging, so that at the outer ends a passage-opening into an entrance of 125 M. was formed. The inner harbor had a depth of 7.5 M. at low tide (later deepened to 8.50 M.), a length of about 1,100 M. and a bottom-width of 185 M., therefore affording a water-surface of more than 20 H.A. The gully in the outer harbor was given a width of 250 M., a depth of 8 M. at low tide, after 1910 increased to 9.50 M.

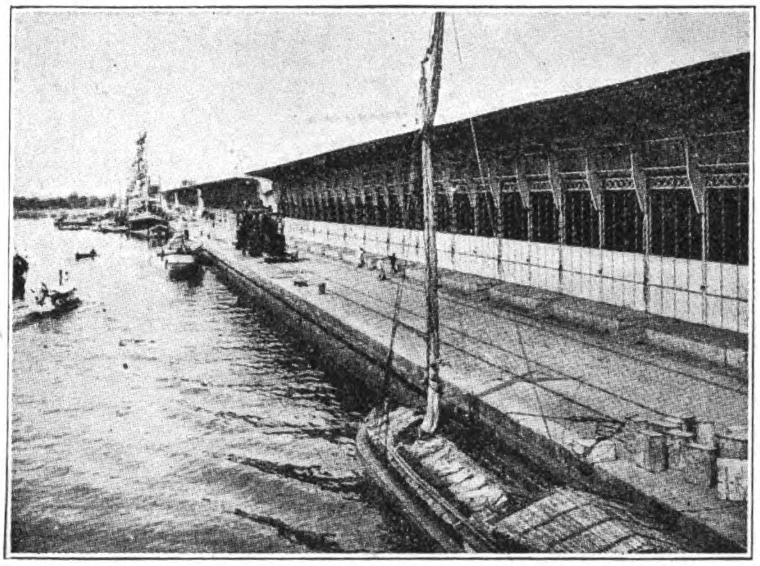
On the place, where it was originally planned to construct the second harbor-basin, however, a railway yard with a station was built and a small basin dug (314 by 55 M.), originally intended as a coaling-station but afterwards equipped for the 4,000-ton floating dry-dock, which with the surrounding workshops, etc., is now the



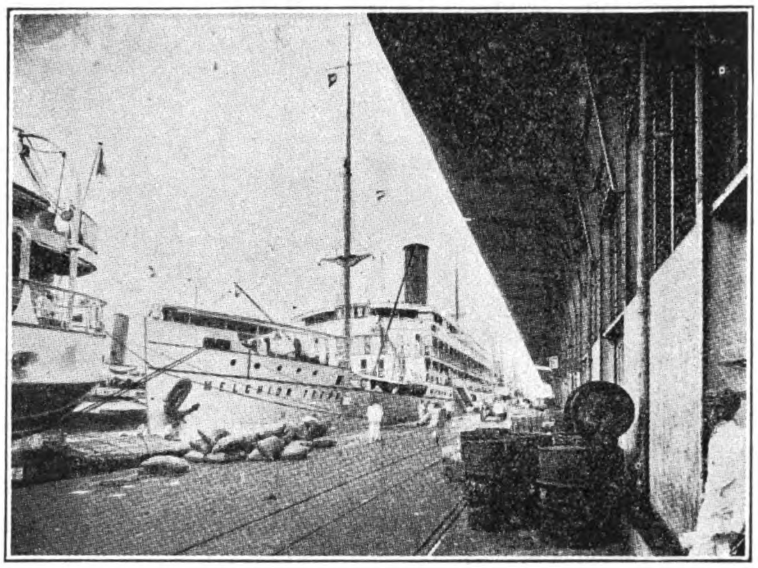
Harbor View, Batavia



Batavia, Plan of Tandjong Priok Harbor



Batavia, The Tandjong Priok Wharf



The Quay at Tandjong Priok

property of the Tandjong Priok Dry-dock Company, by which it is exploited. West of the dry-dock harbor and adapted for proas is the 9 K.M. long navigation canal, which connects Tandjong Priok with Batavia. Along the western side of the first inner harbor were built a quay 1,000 M. long and seven steel godowns, each 125 M. long and 35 M. broad. The 8.80 M. wide space between the front of the quay and the front of the godowns is equipped for the use of electric cranes as well as for through railway-traffic. At the eastern side of the first inner harbor were constructed landing-stages on screw-piles, which serve for the unloading of salt, tin and coal.

It is planned to replace a considerable part of these landing-stages by a quay, which will join the 124 M. long tract of quay completed in 1914, entirely in the south of this basin, along which a spacious iron shed was also built. The growth of Tandjong Priok as import and export harbor of a rapidly developing and very important hinterland (West Java) and its increasing importance as transhipment harbor for a large part of the Indian Archipelago, made the works which had been constructed too small by the end of the nineteenth century.

The solution as to how the gradually appearing obstacles should be overcome was arrived at in 1910, after the above-mentioned visit of the committee Kraus-de Jongh, which also included this harbor in their report.

As a result of the plans, which were developed, it was decided to construct a new basin east of the first inner harbor, 1,000 M. long, 120 M. broad and, like all the larger harbors in the Dutch East-Indies, adapted for ships with a maximum draft of 40 feet. The quay construction along the western side followed directly after the dredging and several lessees were readily found for the adjacent tracts. The digging of the second inner harbor necessitated a bend in the shore end of the east harbor dam, which formerly joined the shore in a straight line. The west dam was also somewhat changed, being lengthened towards the shore, after which a considerable tract of land was reclaimed by filling in the area behind the elongation. In 1915 it was decided to also make a quay along the eastern side of the harbor and to enlarge the bottom width of the basin from 120 to 150 M. The new wall serves over a great length as anchorage for ships which load or discharge coal. In the year 1917 the second inner harbor was completed. Later elevators were constructed at the eastern edge for the mechanical handling of coal; on the western edge the national steamship enterprises are building their establishments, including among others four sheds, 40 M. broad, 120 M. long, consisting of a ground floor with a story.

A new, third inner harbor, east of the second harbor is now in course of construction. With a length of over 1,000 M. this harbor will be 215 M. wide and the quays will be equipped for ships of 12 M. draft. The small peninsula between the second and third inner harbor (300 M. broad) is already entirely spoken for while prospective lessees have also registered for tracts along the east side of the harbor. These grounds, intended for shipping purposes, commerce and industry, are being connected with the railways as well as with the waterway. The northern half of this peninsula is intended for a coal-station with conveyors for loading and unloading. The soil obtained from the dredging of the third inner harbor is utilized for raising the tracts east and south of the large harbor, which tracts are being made to serve for industries and housing. At the same time this raising offers the priceless advantage of coming a considerable step nearer the goal desired by the harbor management: a healthy Tandjong Priok.

East of the harbor area the Dutch steamship companies, headed by the Royal Packet Navigation Company, in co-operation with the government are building numerous kampong houses and coolie lodgings (the living-quarters at Pedjongkoran), with sewer system, aqueduct, electric lights, spacious markets, cinemas, central kitchens, etc. On the east side the living quarters are bounded by a fishing-harbor, for the benefit of that part of the population which remained true to the old trade. On the other side of that harbor the space is left open for an extensive aviation field. On the west side of the Pedjongkoran quarter runs the Kodja canal, accommodated for proa navigation, which connects the raised grounds south of the harbors with the inner harbors. These tracts, which can be extended to any dimension, are intended for commerce and industry. They, too, will be connected by railway. Various tracts are already taken up, among others, some have been rented to petroleum companies. Although the third inner harbor is still in an embryonic state, it has already appeared necessary to take further harbor-extension into account. So far as the large water areas and quays are concerned, this will be done at the west side of the first inner harbor.

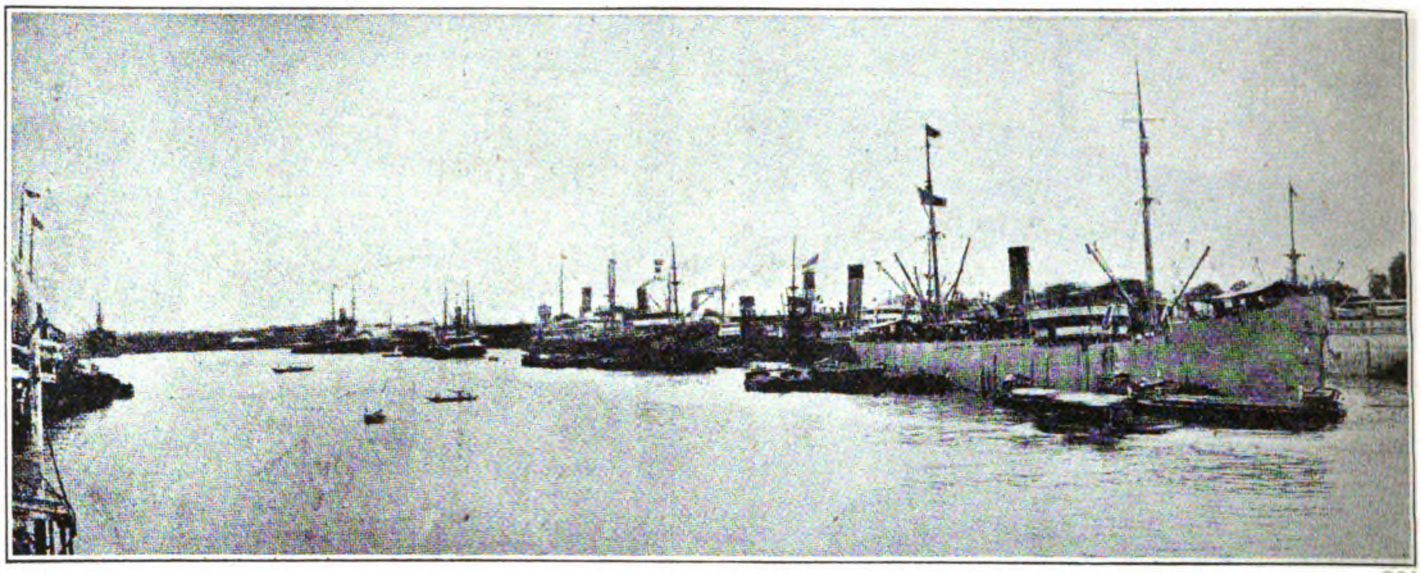
A few figures regarding the shipping in the harbor of Tandjong Priok may also be given here.

The total capacity in net register tons of the ships, which called at Priok, increased from 549,000 in 1885 to 830,000 in 1895, 1,654,000 in 1905 and over 3,000,000 in 1915.

Although Tandjong Priok, like all other harbors, suffered from the consequences of the war, a considerable revival can now be seen.

The freight traffic did not fail to keep pace with the growth in tonnage. The value of goods imported and exported amounted to:

	in 1904	and in 1913
Import	*f* 29,840,000	*f* 76,489,000
Export	*f* 25,854,000	*f* 60,820,000
Total	*f* 55,694,000	*f* 137,309,000



Harbor of Sourabaya

The receipts of the service of the customs also show a considerable increase of the freight traffic. They amounted in 1905 to *f* 3,224,000, in 1910 to *f* 4,987,000, in 1913 to *f* 7,031,000 and in 1918 to *f* 8,450,000.

Finally it should be mentioned, that without depreciations and upkeep expenses, the construction of railroads and what has been done by private enterprise, the harbor of Tandjong Priok has required up to the present time an amount of round 41 million guilders.

THE HARBOR OF SOURABAYA.—As Tandjong Priok is the import and export harbor of rapidly developing West-Java, so Sourabaya occupies this position for the eastern part of Java, the most fertile part of the island.

In 1909, Prof. J. Kraus and G. J. de Jong were invited by the government to give their advice regarding the harbor-improvement of Sourabaya.

In 1910 their report appeared, in which they suggested among other things that a great part of the commercial traffic be transferred from the heavily overcrowded Kali Mas to a spacious, modernly equipped harbor tract, and in which was included a plan of a new harbor, located at some distance from the old business centre.

This plan has been partly carried out and for the rest served as a guide for the works carried out since 1910.

These works consisted in the first place in the construction of a 200 M. wide pier (the so-called North Pier) west of the outlet of the Kali Mas and about perpendicular to the direction of this river. The pier was connected with the shore by a 400 M. wide dam alongside this outlet.

West of this dam and about parallel with it a pier was built out running from north to south. Between the north end of this pier and the west end of the North Pier there is a 350 M. wide channel opening.

The groundlevel of the beach located between the shore end of the dam and the new pier was raised with the soil obtained from the dredging of the 80 H.A. large basin, bounded by the new pier, dam, beach and North Pier and destined for industrial purposes and for building tracts.

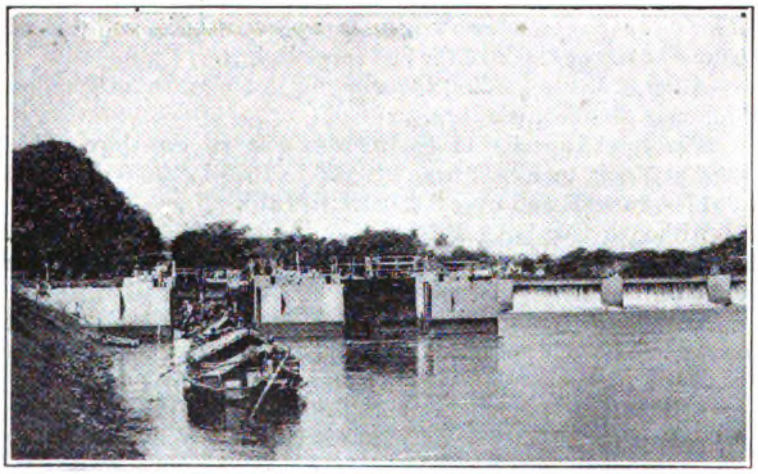
From the North Pier, the outer quay (the Rotterdam Quay, situated along a 16 M. deep waterfront) is 1200 M. in length and the inner quay (the Amsterdam Quay, along which the basin was dredged to a depth of 9 M.) 800 M. in length. The head end of the pier is also closed off by a quay (the Ymuiden Quay).

Along both the outer and the inner quay a space of 10 M. is left free for railroad-traffic and cranes while a 40 M. wide tract is intended for the building of godowns. On the shoreside of both rows of godowns runs a 30 M. wide road.

The works described once being started, their great utility became fully apparent and the increasing demand of interested parties to obtain the use of the completed structures had the result that, even before the completion of the buildings which were in course of construction, the extension of the original plan had to be begun.

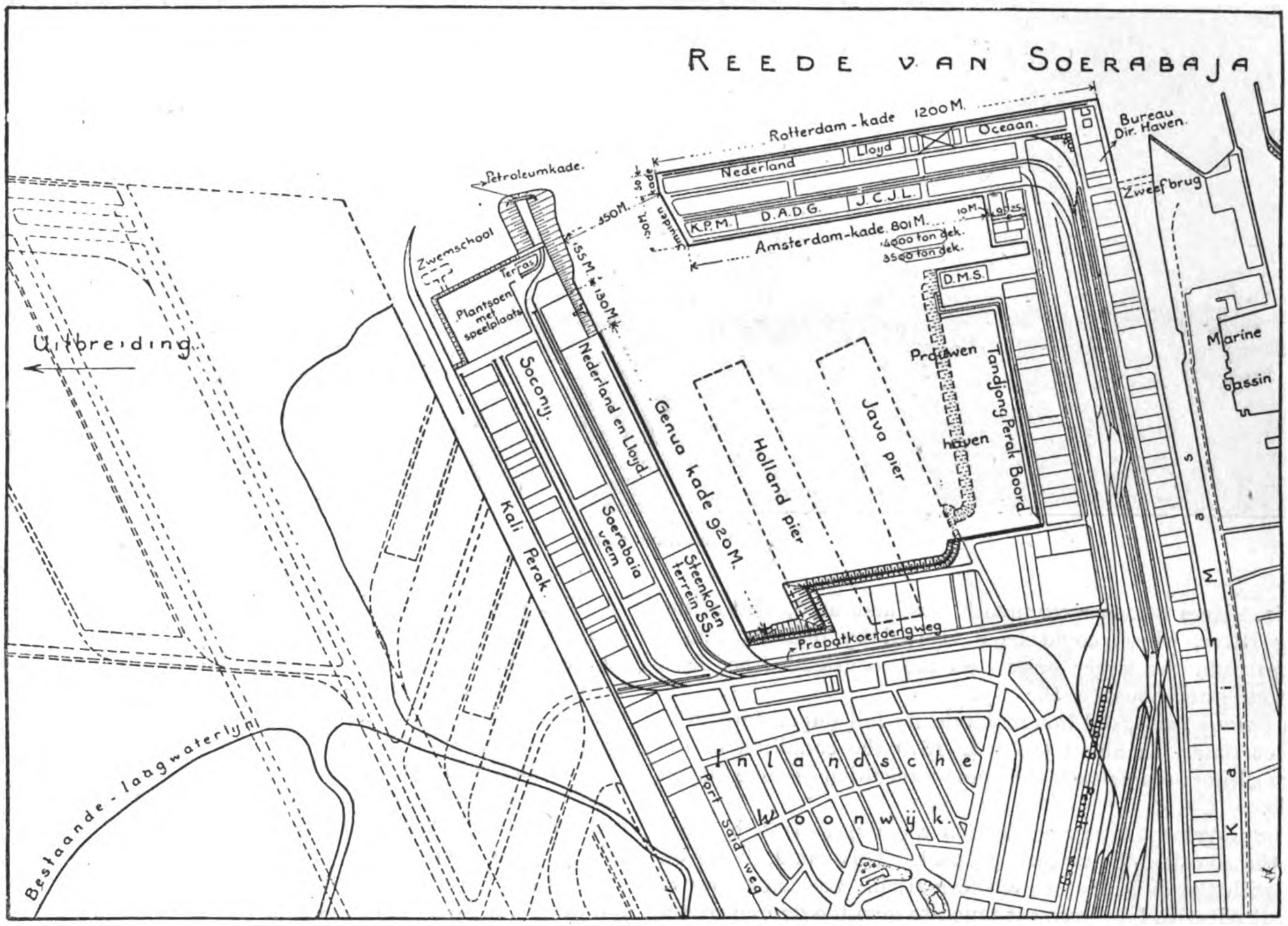
The sea-going vessel almost chased the dredger away; everywhere extension of quay length was insisted on in spite of the excellent roadstead and the great number of proas, although cranes and other mechanical equipment could not at first be obtained on account of war conditions.

A glance at the map tells in what state the construction was in the beginning of 1920, to which may be added that the quays



View of Locks at Goebeng, Sourabaya

The Little Harbor at Oedjong, Sourabaya



Sourabaya Harbor Plan

of the Holland Pier, begun not long ago, and of the Java Pier, to be constructed after this, are already requested for rent.

While for the quays first built, a waterfront of little over 9 M. depth under low tide was provided, the newer ones will have a waterfront of 10 and 12 M. depth.

Alongside the above-mentioned West Pier, the so-called Genoa Quay, with a length of 920 M, is being built at present.

The south part of this quay is reserved for coal storage.

For the need of petroleum ships, which are not admitted into the inner harbor, a landing-stage is found at the north end of the West Dam, from where inflammable materials are stored on spacious tracts behind the Genoa Quay.

From the 400 M. wide dam along the Kali Mas, parallel with a 20 M. wide road along this river, is reserved a strip 50 M. wide for business tracts, besides a width of 30 M. for a road back of these tracts.

To the west of this was reserved 150 M. for a station and shunting-premises, to be used for harbor-service.

The tracts, intended for commercial and other purposes, alongside the East Pier of the harbor basin, are separated from these shunting-premises by a 50 M. wide road.

In the north-east corner of this basin were installed two floating dry-docks of 14,000 tons and 35,000 tons lifting power, belonging respectively to the government and to the Dry-dock Company, which latter exploits both these docks and the adjacent small dock harbor.

Wherever possible the Kali Mas has being gradually widened from 65 to 100 M., while at the same time along the entire shore, quays were in course of construction, whereby the opportunity for the mooring of proas was greatly benefited.

Where the buildings standing along the shores would make the widening of the river too expensive, the old constructions are being replaced by new ones, with deeper foundations, which allow safe dredging.

The construction of the quays and piers alongside and in the great harbor basin, which thus began to form a most important part of ocean navigation, made it necessary to look for similar tracts elsewhere which might be made ready for the use of those who wished to occupy tracts situated at shallow waterfronts.

For this purpose attention fell upon the muddy alluvial grounds west of the new works, where there is opportunity for unlimited extension and for the satisfying of all needs and desires.

Some years ago, in accordance with this idea, the West Canal was completed, the borders of which readily found prospective occupants and which will be further lengthened under the name of Kali Perak to near the Grissee Road, or in other words will be brought closer to the grounds intended for housing.

The Kali Perak may therefore be considered as a second Kali Mas, in this way, that the western bank is to be divided by branch canals, according to need, and that here also as on the other harbor tracts it will be possible to establish railway connections. It will also be possible, if desired, to widen and deepen the most northern part of the Kali Perak, so that the requisite space can be offered to factories or establishments, which need spacious and not too expensive grounds, within reach of medium-sized, sea-going vessels.

It is expected that in about ten years the plan projected by Messrs. Kraus and de Jongh will be completed, though with revisions and extensions, and preparations as to further extensions, should such then appear necessary, have been made. This is shown by the map on which, among other things, is drawn a second North Pier with basin.

The value of the *traffic* through the quay in 1918 amounted to *f* 292,000,000 and customs receipts to *f* 9,835,000

Up to the present time the harbor has required an expenditure of more than 30 million guilders, not including the expense of railroad construction and what has been built by private parties.

THE HARBOR OF SEMARANG.—The original development of the harbor of Semarang came about in the same way as that

Samarang Harbor

of Batavia. Here also a river mouth was first used, that of the Semarang River, whcch could be navigated by lighters, taking their cargo from the larger vessels on the roadstead (the Java Sea), up to the storehouses in the city.

This passage, also, did not maintain its full importance until the present time. In about the year 1870 the condition of the river from silting became such that proa navigation became almost impossible.

For improvement a new connection was dug in 1872 between the sea, the so-called New Harbor Canal. This canal, however, also met with the difficulty of mud formation. Various efforts to bring about effective improvement failed to give the desired result.

Finally in 1900 it was decided to build a new proa harbor, which is now completed in spite of the many difficulties encountered.

The new harbor construction, with an area of 13 H.A., is situated east of the harbor canal, of which the west pier has been lengthened to 1,600 M., to prevent silting of the mouth and to maintain a greater depth.

The proa harbor has a spacious frontage, branching out towards the land in two custom basins, respectively 55 and 65 M. wide, and in a small harbor for fishing vessels. On the seaside this frontage is connected with the harbor canal by a 75 M. wide entrance.

The fishing harbor has a surface area of 40 by 100 M^2 and has quays on the south and east sides. These quays join those of the custom-house basins, which have a total length of 1,393 M.

The pier, which is built with 24 M. wide sheds between the two basins, is 125 M. wide. The north and south sides of the pier are respectively 314 M. and 174 M. long. Apart from the old custom-house ("boom") space and private storehouses, the harbor management has the disposal of thirteen sheds with a total area of $\pm$ 35,000 M^2.

To the equipment of the harbor belong a small dry-dock besides a 10-ton and a 25-ton stationery steam crane. Most of the sheds are so located, that they can be connected with both the railway lines going out from Semarang.

Although the new proa harbor brought about considerable improvement, this will not be sufficient in the long run. Semarang, also, wants a sea harbor and in the first place a protected roadstead, where transhipment between ship and proa can take place undisturbed.

During the west monsoon the Java Sea is often so stormy, that traffic with the shore must sometimes be stopped entirely and the discharging of freight can only take place alee of the ship.

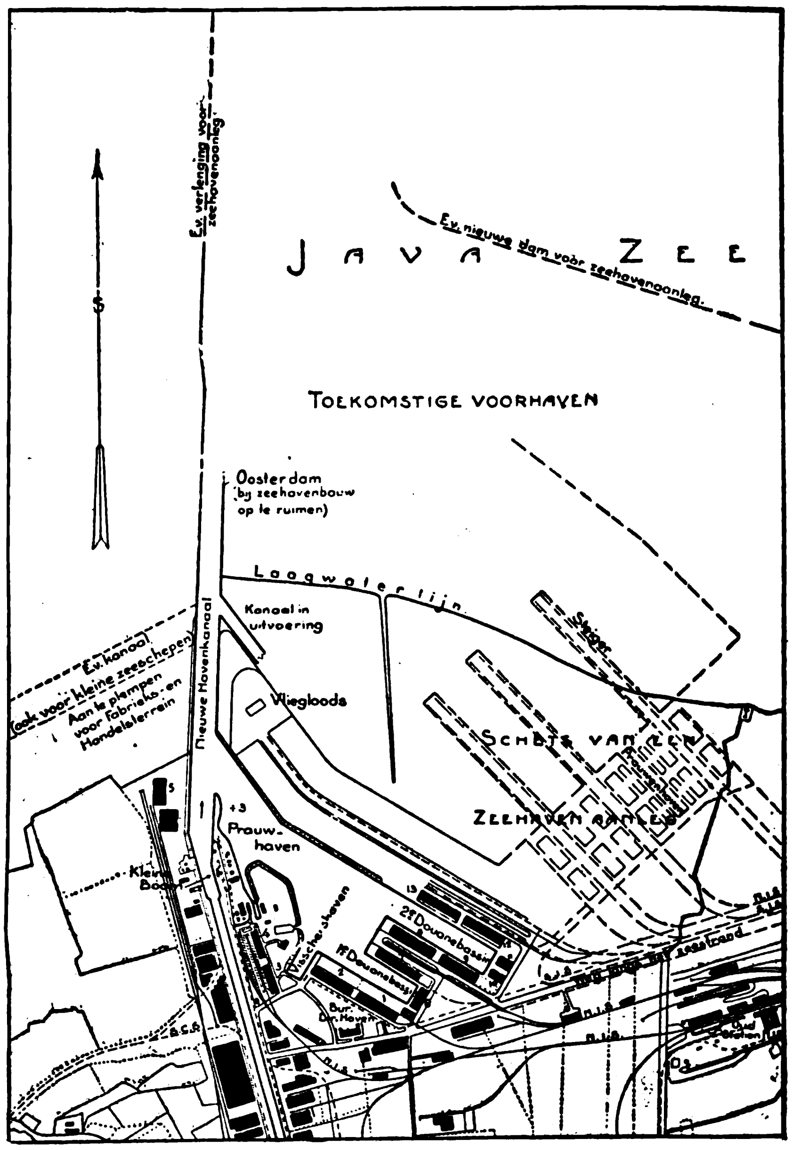
Delay in transport, accidents to proas, damage and loss of goods are an inevitable consequence of this condition.

Before risking a harbor venture, however, the government has made thorough investigation into those technical and economical problems, which must not be overlooked when building seaports.

The result of this investigation justifies the construction of a seaport, providing it is confined to a somewhat moderate solution and that, among other things, the harbor dams be limited to a

Semarang, The New Proa Harbor

The Outer Harbor, Semarang



Plan of Semarang Harbor

depth of 5 M. Harbor dams, built out into the sea to a considerably greater water depth, would require expenditures beyond all limits. Moreover, the present state of dredging-technic makes these longer dikes superfluous, as proven by experimental tests.

Furthermore, it will not be possible to build the usual quays, on account of the very poor subsoil and the necessity of hauling the sand required for improvement of the subsoil from too faraway.

The solution will be sought by putting into practice the pier system, which predominates in American harbors. Concrete piers built out from the shore (if desired to a length of 400 M. and 40 M. or more in width), on which sheds of one or two storeys are built, having railway connections, give excellent opportunity for the mooring of the largest sea-going vessels as well as for loading, unloading and storage.

The east side of the existing harbor canal is the most suitable place for the new seaport, if only for the freight traffic of the railways, about 80 per cent. of which run in an easterly direction, and on account of the close relation which can be established between the new seaport and the already existing harbor. The direction of the piers is so chosen, that the moored ships lie with the bow to the storm direction. Towards the east side, where it is planned to reserve a spacious tract for the housing of harbor laborers, sufficient extension can be acquired for the next ten years, while west of the harbor canal, cheap, spacious tracts, with railway connections, and situated either along deep or shallow water-fronts are available for industrial purposes.

The shipping returns of Semarang for 1918 showed 875 steamers arrived with a net capacity in M³ of 4,684,000 tons.

The total amount of goods imported and exported in 1918 amounted to 907,000 tons.

The Harbor of Tjilatjap.—This harbor is the most favored by nature of all the harbors in Java. Tjilatjap is situated on a peninsula, bounded on the east side by the Indian Ocean and on the west side by the River Donan. The mouth of this river, to which a passage gives entrance of such natural depth that ships of 7 M. draft can enter at all times and those of 8 M. draft at ordinary high tide, affords an absolutely safe anchorage, protected by the heave of the Indian Ocean by the island Noesoe Kembangan which lies opposite.

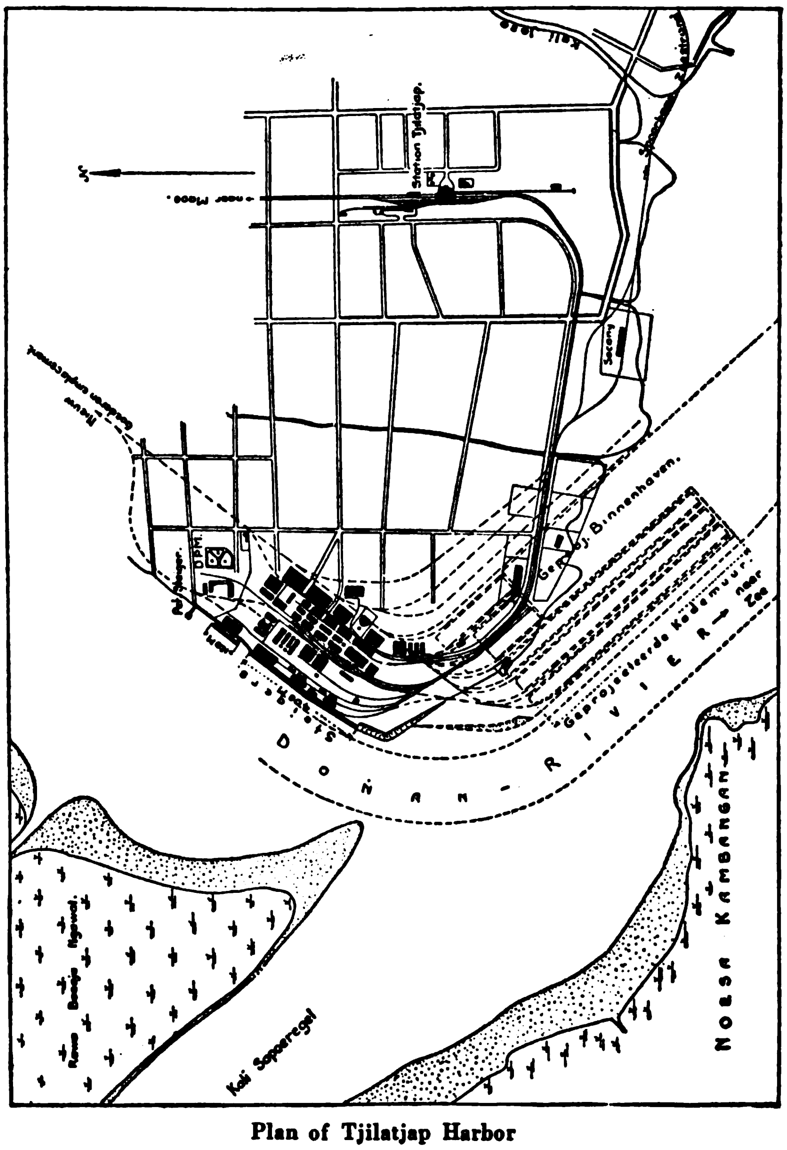
Tjilatjap's hinterland is also not without importance. In spite of all these favorable circumstances the harbor, because of its more isolated location on the south coast of Java, outside the ordinary shipping routes, has not been able to develop to the extent of the above described harbors, situated on the north coast.

The harbor establishment of Tjilatjap in its first construction, dating from the years 1886-1888, lies 8 K.M. from the sea and in 1887 was connected with the railway system of Java by the line Tjilatjap-Maos.

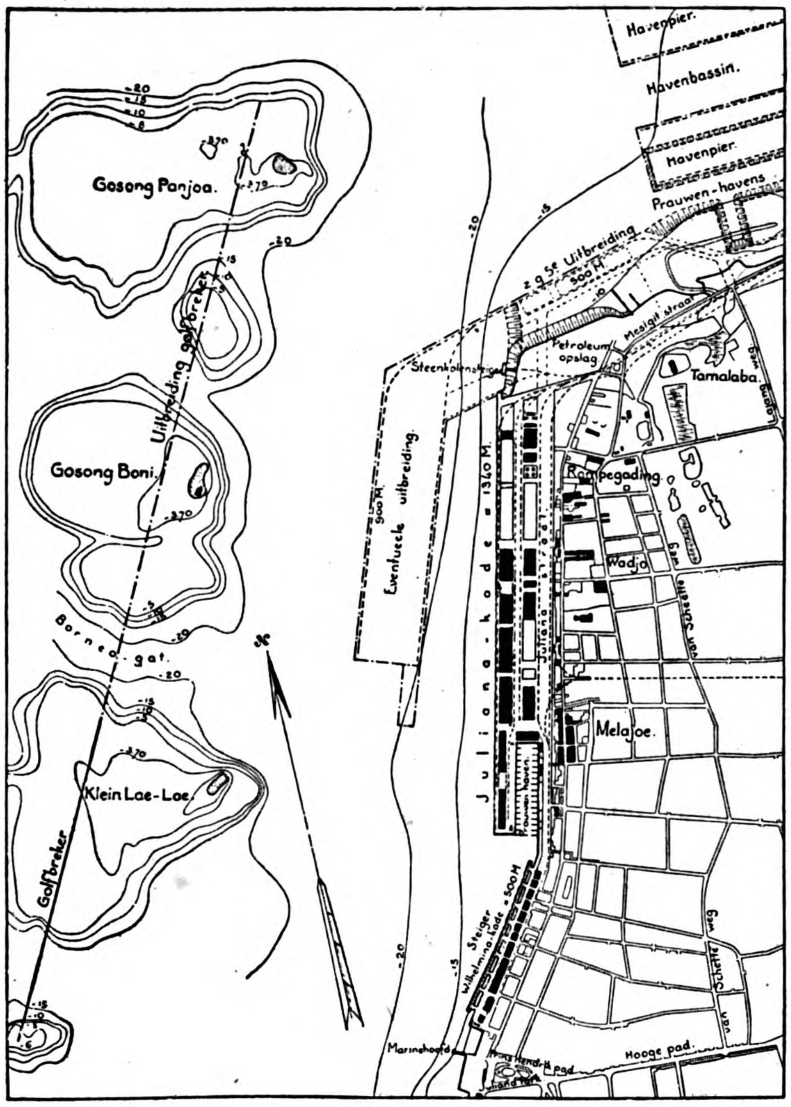
With a wharf on screwpiles about 10 M. wide, soon lengthened to 408 M., this first construction afforded a mooring place for vessels with a draft of 6.50 M.

Behind the wharf were erected storehouses, freight depots, custom-houses, coal-sheds, etc., all connected with the railroad. Besides these, a salt wharf and a petroleum wharf were constructed.

About 1910 shipping had increased to such an extent as a result of the development of the sugar industry and the flourishing



Plan of Tjilatjap Harbor



Plan of Macassar Harbor

condition of the hinterland, that an extension of the wharf length had to be undertaken.

It was decided to build a wharf 127 M. long north of the one already existing and running ahead of it into the sea, so as to give ships of 8 M. draft an opportunity to moor. The extension also included the building of two sheds with a surface area of 4,500 M^2, and improvement of the railway construction.

After some disappointment, which caused delay in the completion, the projected works were finished in 1918.

These works, also, are no longer sufficient for the steadily increasing traffic of the harbor of Tjilatjap.

New plans are already proposed, the carrying out of which will be begun in 1920. These will bring about improvement in the connection of the harbor structures with the railroad system by building, among other things, new shunting-premises, which will join an 800 M. long quay, to be built down-stream from the present harbor area. If in the future more mooring space should become necessary, this can be provided by the building of an inner harbor.

Behind the quay, for which several tenants have already appeared, besides the coalyard of the State Railways, also the necessary sheds and storehouses will be erected.

The old establishment will remain of particular importance to the development of coast navigation.

Closely connected with these improvements is the dredging of the passage and of the shallows in front of the mouth of the Donan River, which work has already been started.

The number of ships which called in the years 1905 to 1914 increased by 35 per cent., the not capacity by about 60 per cent. In 1913 the harbor was visited by 170 ships with a total capacity of 469,000 register tons.

With this increase the freight traffic kept pace, rising from round 224,000 tons (of 1,000 K.G.) in 1910 to 323,000 tons in 1914, an increase, therefore, of almost 45 per cent.

THE HARBOR OF MACASSAR.—About a quarter of a century ago only a 490 M. stretch of the beach, along which the town of Macassar extends, was provided with a quay. Most of the warehouses and offices of the European and Chinese tradesmen were found here. Six wharves from 30 to 60 M. in length were built out into the sea for the mooring of sea-going vessels, while proas could moor at four smaller wharves.

The vessels, which did not use the piers, anchored on the roadstead and loaded and unloaded by means of tongkangs, proas or sampangs, which, except for a few days in the West Monsoon, could at all times be easily set on the beach north and south of the quay.

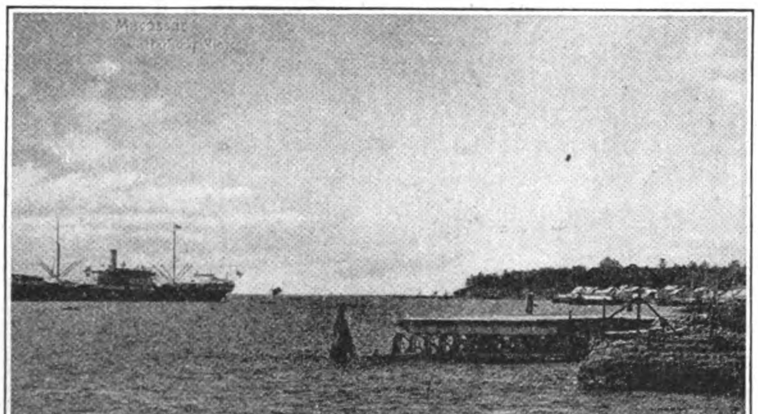
When traffic assumed considerable proportions, the number of steamers calling at Macassar more than doubled from 1896 to 1900, it became urgently necessary to provide landing facilities.

This was done by the construction of a wharf on screwpiles, 500 M. long and 10 M. wide, connected with the shore by footbridges, which wharf was completed in 1908, in spite of the many difficulties encountered.

At the same time a few sheds were built.

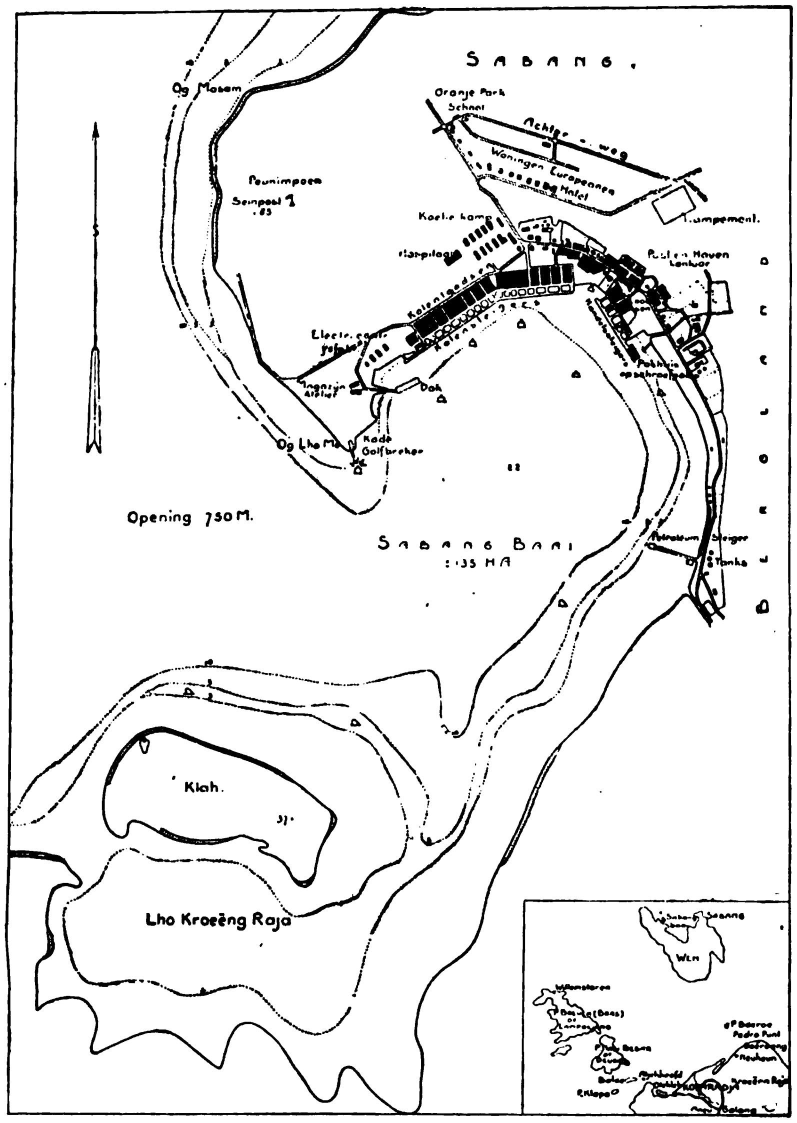
The ever increasing transit traffic of Macassar, which by its geographical location forms the staple harbor of the eastern Molucca Archipelago, made it apparent already in 1910, that a new extension would be necessary. This has been carried out according to the plans of Messrs. Kraus and de Jongh, who were also consulted by the government regarding Macassar, in the form of a caisson quay, built out into the sea north of the screwpile wharf.

When the quay construction had once been started, it soon



View of Macassar Harbor

View of Landing Place, Macassar



Plan of Sabang Harbor

became apparent that it had to be extended considerably farther than was originally supposed. In the years 1912 to 1918 a quay 1,340 M. long was completed, offering a depth of from 9 to 10 M. to vessels at low tide. Behind this quay, which, like the screwpile wharf, was built out into the sea at some distance from the shore—for which important soil improvements had to be carried out—a tract 170 M. wide was acquired, while east of the southern end a proa harbor was constructed, 280 M. long with a water depth of 3 M.

North of the quay a tract was banked in, intended for the storage of coal and petroleum.

While the screwpile wharf was sufficiently guarded by the coral islands, which protect the roadstead of Macassar, this is not the case with the new quay. In 1919 work was begun on the construction of a breakwater over the coral banks, which will also assure vessels in the west monsoon the desired quiet mooring at the quay.

At Macassar it also happens, as is usually the case in a flourishing and growing harbor, that the demand for mooring space and storage tracts exceeds the supply.

Further extension of the works just completed must therefore be considered here also. This extension is planned east and west of the works last completed and the building of an eastern quay, 500 M. long, will be begun as well as the preparation of tracts for commercial and industrial purposes.

With regard to wind and current this quay of the so-called fifth extension is very well located and can dispense with a breakwater. If in the future still further extension should prove necessary, this can be obtained by building out a pier west of the existing quay and by constructing harbor piers and basins intended for mooring sea-going vessels north of the new proa harbor.

In connection with the plans considered regarding the building of tramways in Celebes, direct railway connection is counted on in all projects.

The total value of imports and exports for Macassar in 1917 was *f* 30,247,000.

In conclusion it may be remarked, that the harbor improvements of Macassar required up to the present time a capital expenditure of round 15 million guilders, not counting the cost of works completed by private enterprise, etc.

EMMAHAVEN (PADANG).—Emmahaven, situated in the northern part of the Queen's Bay, is the principal harbor of the entire westerly coast of Sumatra.

The main purpose for its construction during the eighties was to create an opportunity for the shipping of Ombilin coal.

Troesang Bay, situated further south, also offered a good location for this purpose. The nearness of the flourishing business town of Padang, however, gave Queen's Bay the preference over Troesang Bay, which is more favorably situated from a technical point of view.

Construction was begun at once on a large scale.

By the building of two breakwaters a harbor was formed between these and the coast with a surface area of ±·1 K.M^2.

One of the breakwaters, the smallest, having a length of 260 M., is built across a coral bank, which runs dry at low tide, about parallel with the coast, while the other was constructed in a south-easterly direction and extends into the sea over a length of more than 900 M.

The depth of the harbor and the entrance was brought to 79 dM. under ordinary low tide, so that in general ships with a draft of 27 feet met with no delay when entering, while steamers with a draft of 30 feet had an opportunity to enter twice a day. Three wharves on screwpiles, 84.60 M. in length, to which, therefore, three ships of about 125 M. could moor, a smaller wharf of 50 M. and two small wharves for government vessels and sailing vessels were built. There was also a separate location for the coal-shute, a mechanical apparatus, intended exclusively for the transport of Ombilin coal.

The three above-mentioned wharves were each 10 M. wide and built out, at a mutual distance of 60 M., alongside the shore.

Behind these screwpile wharves and separated from them by a 10 M. wide tract of ground, were erected five storage sheds and entrêpots, besides a small entrêpot for inflammable goods. At some distance behind these sheds is located the railway station, also used as postal and telegraph office, from where a railroad runs direct to Padang, which is 7 K.M. farther on. Parallel with the shore end of the 900 M. long breakwater and separated from this by an 80 M. wide tract, on which, among other structures, are a storage shed and the government salt warehouse, was built a trade wharf 50 M. in length.

The short little mooring wharves for sailing vessels and a small dynamite wharf, all three built out from the long breakwater, were also constructed.

After this, few new works have been built. The big scale of construction made this unnecessary. The sheds and entrêpots were lengthened, however, as well as the screwpile wharf (to a total of 430 M.), a new government entrêpot built and the harbor basin dredged out to a depth of 8.50 M. at low tide.

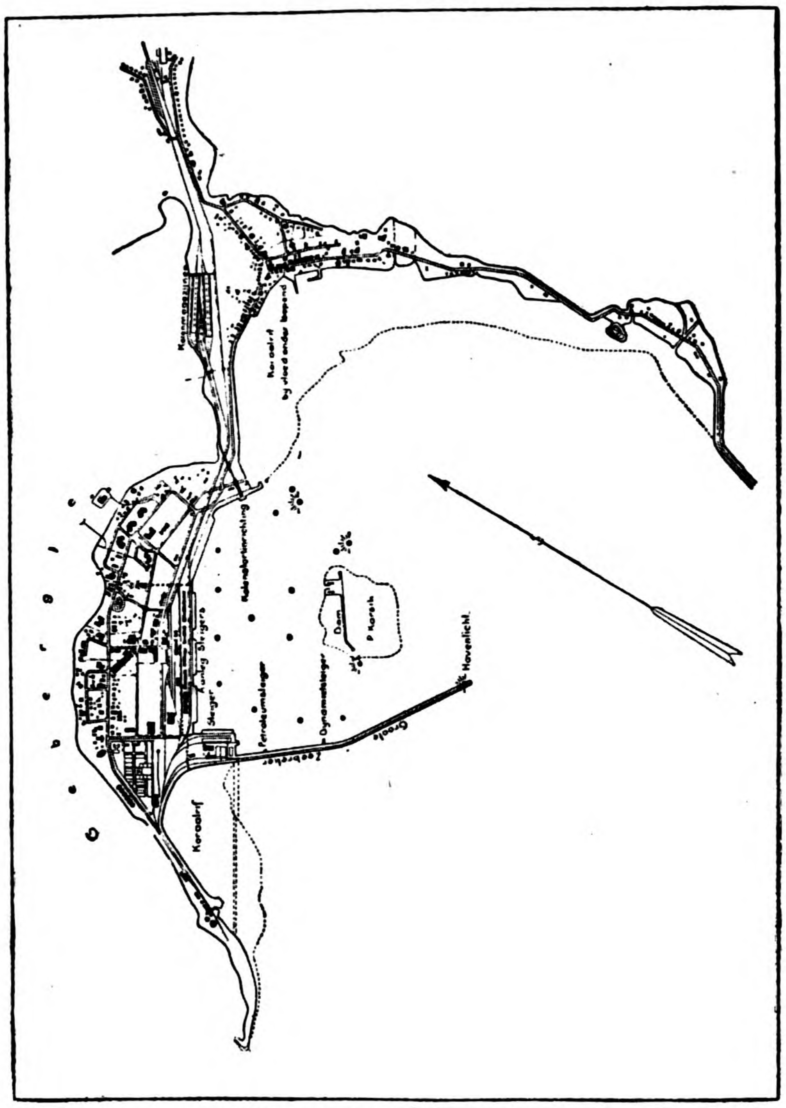
The facilities for loading and discharging coal were also improved. At present the equipment consists of:

(*a*) a coal shute with a capacity of 300 tons per hour (for bunker coal)

(*b*) two electric coal conveyers, each with a capacity of 120 tons per hour and

(*c*) a floating coal conveyer with a capacity of practically 40 tons per hour.

Apart from the coal industry Emmahaven is of importance as an import and export harbor, so far almost alone for the region



Plan of Emmahaven Harbor

directly back of the West Coast of Sumatra, renowned for its beautiful scenery.

The small native craft navigating between the islands and the coast places to the north and south, call at Padang, where the commercial houses are established.

Within a short time extension works at Emmahaven will be considered, which will include among other things the changing of the station-premises, the building of more sheds and warehouses, the raising of the karang banks, besides the deepening of the harbor basin to 9.50 at low tide. This last work has already been begun.

The value of the goods imported and exported during 1918 was 11,636,000 guilders, with a total of 1,740 vessels entered and cleared of 1,664,000 tons.

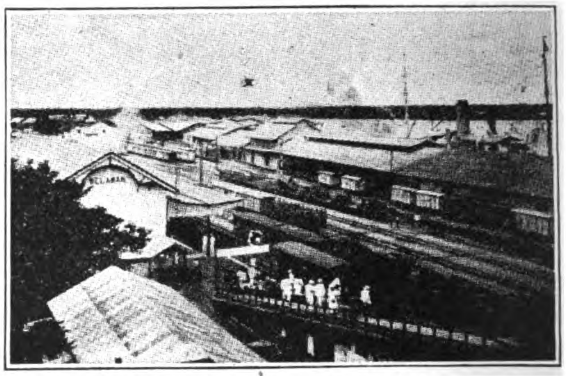
THE HARBOR OF BELAWAN (DELI).—In the whole island of Sumatra there is no province which has developed since 1883 on such a scale as the "Government East Coast of Sumatra," with the capital Medan.

This development, resulting from an enormous extension of the agricultural estates, could not fail to have great influence on the harbor towns of the province and especially on Belawan Deli, situated on the west side of the small island of that name, which is bounded on this side and on the north by the deep Balewan River and on the east by the shallow and much sand carrying Deli River.

Here, in 1890, on the initiative of the Deli Company a harbor establishment was constructed, which put an end to the method of loading and unloading, which had been in practice up to that time (lighter transport between the shore and the vessel anchored of the Belawan River).

The harbor works, constructed by the Deli Railroad Company, which at the same time had established the railway connection between Belawan and Medan and the districts Serdang and Langkat, were of a simple nature. The same was true of the government wharf, the custom-house and the private storage sheds.

Sooner than anyone supposed, however, the time came, when the narrow wharves and the small sheds formed gradually increasing obstacle to the rapid handling of freight.

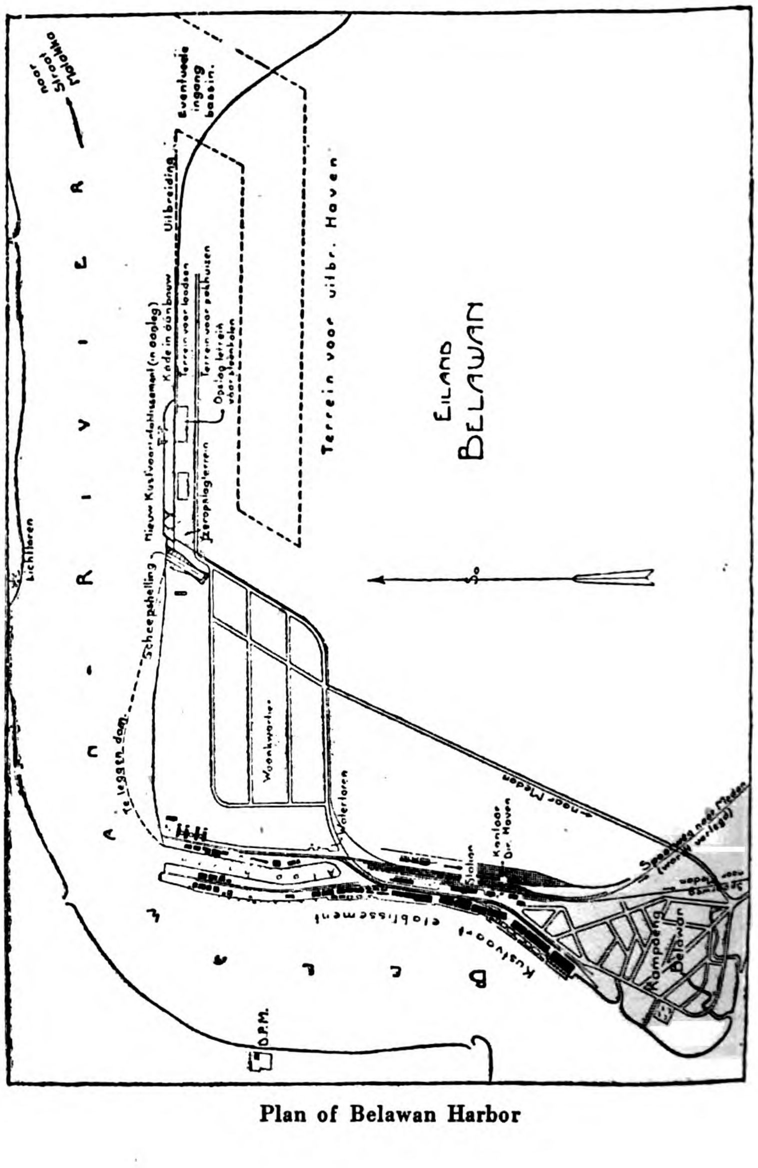


Belawan Harbor and Station

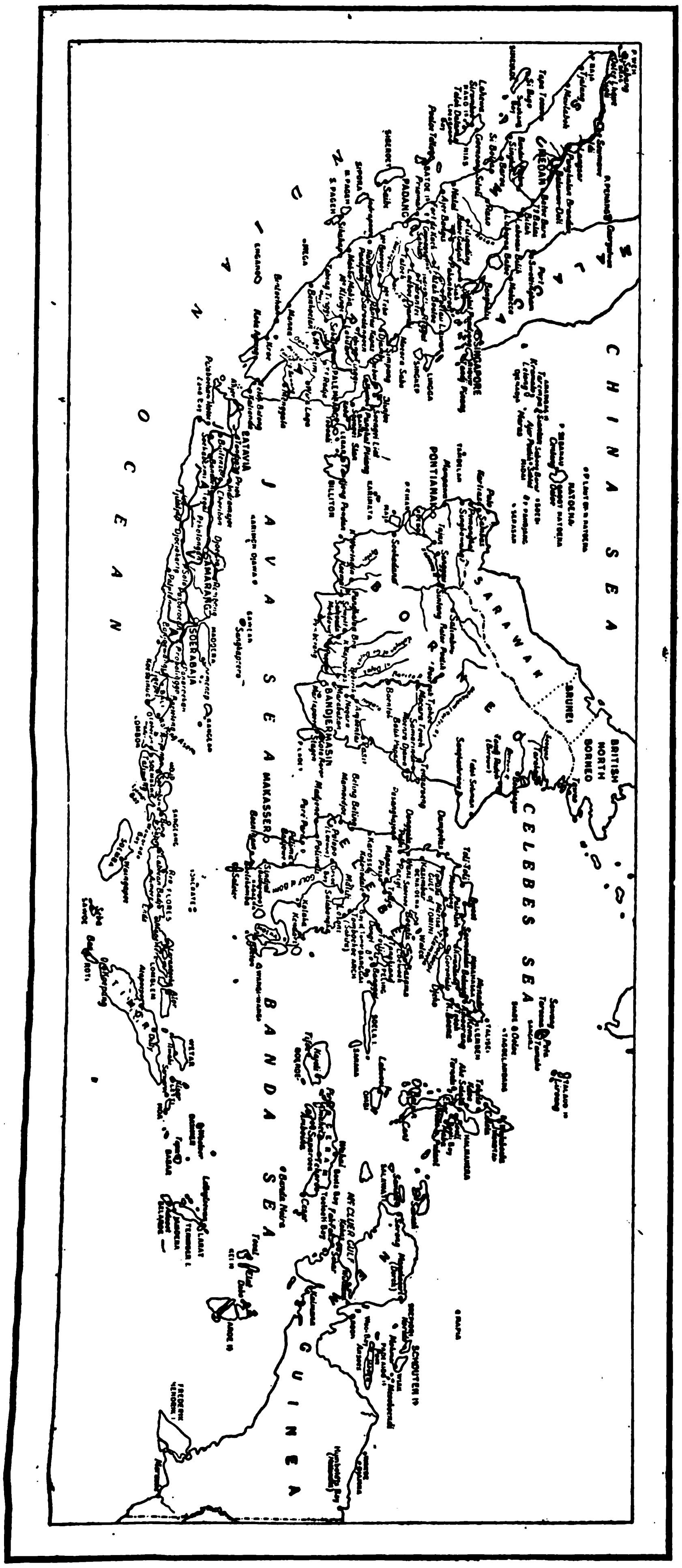
Already in 1895 the first great harbor extension took place and the waterfront was enlarged by 350 M.

The extension of private sheds kept pace with this; a considerable extension of the government custom-houses was completed in 1903.

In 1907 the Deli Railroad Company decided to make an important extension of its harbor works, to which among others belonged the construction of a basin intended for proas, which



Plan of Belawan Harbor



The East Indies

brought atap (roof thatching) from Asahan and elsewhere (atap harbor).

About 1905 the wish was made known to transfer the shipping of the products of Acheen and Deli from the Straits harbors to a port in Sumatra itself by the establishment of a coast navigation, with rather large vessels, along the North East Coast of Sumatra, which again drew attention to Belawan.

Although the first attempts to deepen out a channel in the bank before the Belawan and Deli Rivers failed, they were crowned with success, when in 1912 a mud sucker of great capacity was procured for this purpose.

The results obtained herewith were of so favorable a nature, that prospects opened up of making the Belawan accessible to large sea-going vessels or, as it was said, of making Belawan an ocean harbor.

In the meantime it was necessary to extend the establishment by building more sheds and mooring places.

At the end of 1916 there were available : 667 M. of wharfage, of which 460 M. belonged to the government and 207 M. to private parties, 10,084 M^2 of storage space, of which 5,892 M^2 was government property and 4,192 M^2 private property.

The storage space is still insufficient, however. The existing area being now fully built up, further extension can only take place on the new coast navy yard, located west of the ship-building yard. A shed of 3,300 M^3 with a warehouse (entrêpot) back of it are already being built. Besides, the building of a storage for steel and iron with landing-stages in front thereof has also been started.

Still further extension must be considerd, however. Various factors indicate, that it is not too bold a guess, that within the next few years a total import of 300,000 to 350,000 tons and an export of over 100,000 tons may be counted on, thus a total freight traffic of round 450,000 tons must be handled at Belawan.

When it is taken into consideration, that already in 1917 the harbor-works were no longer sufficient for the export and import traffic (300,000 tons), then it is plain, that, if commerce and shipping are to be allowed to develop unhindered, important extensions in the near future are decidedly necessary.

To carry out these works there are two ways open :

1st. An attempt can be made to transfer a part of the traffic to the smaller harbors of the province, by improving or extending the existing works according to requirements.

2nd. An attempt can be made to draw the traffic as much as possible to Belawan, by taking care, that the harbor facilities there shall fully meet the requirements, which may reasonably be demanded from these works in view of the freight traffic to be expected in this case, wherein it goes without saying ocean-going steamers must be enabled to be moored directly to the landing-stage.

If both solutions are compared, one is soon inclined to give preference to the last named alternative. Not only has experience taught the superiority of the latter method over the former, but by putting it into practice the transloading from coast to ocean steamer is avoided, which is of main importance for Belawan, in which harbor three-quarters of the total import of European goods and rice takes place via the English transit harbors Penang and Singapore. Further development is therefor being done in this direction.

In 1918 a 485 M. long caisson quay was contracted for along the Belawan River, located on the same shore as the establishment for coast navigation but farther downstream.

By the installation of a second mud sucker of still greater power and capacity than the first one, in 1919 an even depth of 73 dM. at ordinary high tide and 65 dM. at low tide were obtained. Ships of 20 feet draft can therefor enter at all times and those of 23 feet at high tide. The dredging work is being carried on continuously.

The river in front of the caisson quay will be dredged out to such a depth that ships with a draft of 9.50 M. can remain moored at the lowest tide.

Behind the quay the usual railway connections, cranes, sheds, living quarters, industrial tracts, etc., will be put in order.

As it is already apparent, that the 485 M. of quay length is only sufficient for a third of the applications made, the wall must at once be lengthened in an easterly direction. Later an inner basin may be constructed, which may either be provided with quays of the ordinary type or with piers, as is the custom in America.

In 1918, 1,100 steamers of 1,141,000 tons capacity entered and cleared from the port.

THE HARBOR OF SABANG.—On account of the purpose for which it was built, this harbor in some measure falls outside the range of the seven harbors already described.

The harbor is situated on the island of Poeloe Weh, about 50 K.M. north of Kota Radja, the capital of Acheen and was built in 1887 by the firm De Lange of Batavia, supported by the Netherlands Trading Co. (Nederlandsche Handelmaatschappij), after the latter had obtained a concession to establish a coaling-station on the bay of the above-mentioned name.

The exceptionally favorable situation of Sabang with regard to world trade, close to the entrance of the Strait of Malacca, was a favorable factor for the purpose which the owners had in view, namely, the etablishing of a coaling-station and a place for transhipment.

That part of Sabang Bay, where the harbor-works are built, is sheltered against heavy breakers and dangerous winds by mountains and higher stretches of coast. Dams and breakwaters were therefore unnecessary.

The entrance to the bay at its narrowest point is 750 M. wide ; a water surface area of 1,500 by 900 M. offers an excellent, not too deep anchorage and can accommodate at least 25 small or 12 large vessels, of which 6 can be moored to piers and 6 other ones to buoys. Between the island of Klah and the shore there is also available anchorage for smaller vessels.

In 1896 two wharves were built on screwpiles for coal loading ships, with the thought in mind, that they must be of a permanent character so as to allow opportunity for further expansion. In 1898 a floating dock with a lifting power of practically 2,600 tons was brought here from Sourabaja as a gift from the government, which in return obtained the right of free dockage for her vessels.

In the same year the Sabang Bay Harbour & Coaling Station, Ltd. (Naamlooze Vennootschap Zeehaven & Kolenstation Sabangbaai) was established, which under the supervision of the Netherlands Trading Company (Nederlandsche Handelmaatschappij) took over the exploitation of the harbor from the firm De Lange.

The real growth of Sabang dates from 1903, the year in which were completed the extension of the harbor-works, including the equipment, workshops and buildings necessary to cope with the steadily increasing traffic.

The screwpile wharf for coaling was lengthened to 550 M. Back of this were built 16 double coalsheds, 24 M. wide and 46 M. deep, besides 5 warehouses. Five electrical, movable portal-cranes considerably increased the working capacity of the establishment. The cranes can be moved along the quay and on the shore side extend for a length of 100 M. over the coalsheds while on the harbor side they reach beyond pier and ship. With these cranes it is possible to unload a vessel of 7,000 tons within three days.

Besides the coal conveyers the Sabang Company has also owned since 1912 a 900-ton bunker lighter, with a loading capacity of 300 tons per hour.

Behind the drydock, besides various buildings such a workshop, storehouses, ice-factory and electric power house, there are also workshops for the repairing of vessels and machines, which shops are profitable to the exploitation of the dock.

In addition there are slip-ways for the building of small steamers, motorboats and lighters, up to 1,000 tons.

Aside from the coaling industry the Sabang Company has built a special small wharf for the ferry service to Oellee-Lheue, besides 200 M. long trading wharves for transhipment and spacious warehouses. While most of these latter are built on the shore, one is placed on the wharf itself. Alongside the hills near the harbor establishment the company has erected various buildings, shops, offices, a hotel, etc.

The new petroleum establishment has been built entirely separated.

Between this establishment and the existing works the necessary space for extension of mooring facilities is available. This part, however, not being so well sheltered against the weather, the new construction will be of the pier type for vessels with a draft of 12 M. or less.

Up to the present all these works have been carried out by the Sabang Company, in this way that since 1911 the Netherlands East Indian government has taken over most of them and given them out in long lease to the Sabang Company.

The agreement is of this nature, that the above-named company obtains money for new construction and upkeep at the easiest terms and that the government (which is interested to the extent of more than 2.4 million guilders) gets a certain share of the profits received.

As already remarked, the main business of Sabang is the coaling industry and the transhipment of cargo.

In 1912 and 1913 the amount of coal imported and exported amounted successively to 420,000 and 450,000 tons of 1,000 K.G., which business in 1915 (due to the influence of the war) decreased to 268,000 tons.

In 1913 there were also handled 30,000 tons of petroleum and 150,000 tons of other goods.

Among these were tobacco, from the East Coast of Sumatra, which was carried from Belawan by coast-vessels and transhipped into ocean-steamers, i.a.; those of the Netherlands Steamship Co. From 1905 to 1910 about 100,000 bales of tobacco were shipped yearly from Sabang to Europe.

It must be taken into consideration, that the consumption and production of the island Poeloe Weh, on which the harbor is situated, is almost nihil, and that therefore the same goods arrive and depart, so that all goods are estimated twice. Thus in 1912 only 210,000 tons of coal were delivered.

In 1918, 479 steamers of 1,091,000 tons capacity called at the port.

Only a few of the middle-sized harbors are discussed in the following article.

THE HARBOUR OF CHERIBON.—Cheribon situated on the great bay of Cheribon, sheltered from the west monsoon, was already in olden times a place of importance.

The favorable natural situation of the harbor brought about very little necessity for the construction of expensive harbor-works during the course of the year. Vessels anchor in the roadstead, while proas provide for the connection with the shore. These proas are now of such dimensions that the loading and discharging of cargo can take place without too much loss of time. They can be moored directly to the shore; landing-stages, warehouses, cranes, etc., are here available.

Two proa harbors afford the necessary mooring place. Care is taken for an undisturbed passage of the proas from the roadstead to these harbors.

In 1918, 478 vessels of 2,181,000 tons entered and cleared from the port.

THE HARBOR OF BANJOEWANGI.—Banjoewangi is one of the important harbors of East Java. The harbor is provided with a proa basin, simple piers built out into the sea and the necessary harbor tracts connected with the railway.

THE HARBOR OF AMBOINA.—Already centuries ago the commercial traffic of the Mollucca Archipelago centred in the provincial capital Amboina.

The Bay of Amboina is about six nautical miles wide at its entrance, then widens noticeably to become more narrow again and to afford a small entrance to a harbor from 12 to 19 fathoms deep. On the east side of this, along the sheltered roadstead, extends the small town of Amboina.

On the south-west side of the inner-basin are a few harbor structures, which have been considerably improved during the

last few years by the building of a concrete pier and the equipment of a harbor tract affording space for various storehouses.

The harbor tract is directly connected with the business centre by a wide road.

THE HARBOR OF MENADO.—In spite of the great difficulties, to which freight traffic is subjected at Menado through silting and a sandbank, which lies at the mouth of the Menado River, trade and shipping are advancing rapidly due to the prosperity of the regions which surround the harbor.

Not only the northern peninsula of Celebes, the Minahassa, forms the hinterland, but the Sangir and the Talaud Islands and Bolang (Mongondon) must be also included.

Now that Menado is touched by ocean steamers sailing to Japan and East Asia, the products from Gorontalo, from the stretch along the Tomini Gulf and perhaps also those from Ternate will be shipped to this harbor.

In this respect, based on what has already been reported, great expectations may be entertained for the future.

Besides the more urgently necessary harbor improvements, which are being actively carried on, plans are already being considered for the construction of a harbor accessible to sea-going vessels. The harbor will have to be constructed landwards and will therefore demand large expenditures.

As soon as it becomes apparent that commercial traffic has assumed such proportions, that such expenditure will be profitable, a beginning will be made towards the realization of these plans.

THE HARBOR OF BANDJERMASIN.—Bandjermasin, the capital of the residency south and east division of Borneo, lies about 30 K.M. from the mouth of the Barito river and on the western bank of the Martapoera River, 9 K.M. from the junction of both rivers.

The situation of Bandjermasin with regard to the hinterland is very favorable for trade by reason of the navigable waterways on all sides. The place is the storage for the products of the enormous river basin of the Barito, a very lively goods-circulation taking place.

Especially the export of lumber and coal have very much increased during the last few years. While the lumber export in 1915 amounted to 10,000 M^3, during 1917 this rose to 58,000 M^3 and this figure will considerably increase as a result of the many wood-felling concessions granted and soon to be exploited. The export of coal in the last few years gives even more significant figures. While in 1915 only 2,000 tons of coal were shipped from Bandjermasin, in 1916 this figure rose to 19,000 tons, while in 1917 even 53,000 tons were shipped.

THE HARBOR OF PONTIANAK.—Pontianak, the capital of the residency west division of Borneo, is located 19 K.M. from the sea, on the left bank of the small Kapoeas River, one of the delta branches of the large Kapoeas River.

Founded in 1771, the town has properly developed, thanks to its extremely favorable location on one of the best navigable mouth branches of the mighty river.

The harbor establishment consists of an almost 500 M. long and 6.25 M. wide landing-stage with sheds and offices in back of it, all constructed of wood.

A small drydock is also being built on the right bank to replace a similar construction, which became worn out.

On this right bank there are in addition coal storage places with a wharf, and tracts for oil storage.

THE HARBOR OF PALEMBANG.—If one sails from the Straits of Banka into the Moesi River, which has an average width of 1,000 M. at its mouth, after 90 K.M. of steaming along this mighty river one arrives at the provincial capital Palembang.

The fact that this is the junction of a number of large rivers, navigable for hundreds of kilometres and along which one can penetrate deeply into the fertile hinterland, readily explains that an extensive business centre was formed here.

The harbor establishment for the sea-going vessels is directly downstream from the city, extending along both banks of the river Moesi, which at that point is 400 M. wide.

An opportunity for mooring is afforded by a landing-stage on screwpiles 250 M. long and 11 M. wide, connected with the shore by means of three foot-bridges. The depth of the water at this landing-stage is at least 10 M. at low tide.

Behind the wharf a spacious tract is available, partly taken up by storehouses and custom-house sheds, with a total area of round 3,000 M^2, while for extension a tract located upstream has been reserved.

Besides this establishment Palembang has a number of larger and smaller mooring-places.

Upstream at the end of the built-up part of Palembang and at the junction of the Ogan and Moesi Rivers the terminal point of the South Sumatra Railway is to be found. For the need of sea-going vessels which sail up to this point, a wharf is constructed, where the goods brought by railway can be directly transloaded. Adjoining this there is a coal conveyer for the shipment by steamer of the coal from the Lematang coalfields, which are exploited by the government.

To overcome the difficulties presented by shallows at the entrance of the Moesi the digging of a canal 5 K.M. in length is being considered, which will connect the deep part of the river with the Banjoe-Asin Bay. This gulf generally offers a quiet water area of sufficient depth for most of the big ocean-liners.

Besides the canal a transloading station for ocean navigation might be established on the aforesaid bay.

Investigation of these still vague plans for the future is being actively carried on. In the meantime, in expectation of the outcome of this investigation, present conditions are being improved as much as possible by dredging the most shallow parts of the Moesi.

For Anything Affecting Industrialism

OFTTIMES a little shadow of a memory flutters before the consciousness, so illusive as to disappear entirely if too desperate an effort is made to secure it. Something vaguely remembered, something that would render a task less difficult were it stripped of its impenetrable aura, something to reimburse, to augment, could it be secured, and there were no need of such a weighty and authoritative volume as "The Subject Index to Periodicals" issued by the Library Association, Stapley House, 33 Bloomsbury Square, W.C. 1., London. But the brain is a recalcitrant bit of mechanism, and if too brusquely used makes evident its relationship to the mule. It will not reveal the little something that is intangible and so desperately needed. A helper is required, a little clue, and the desired is at hand.

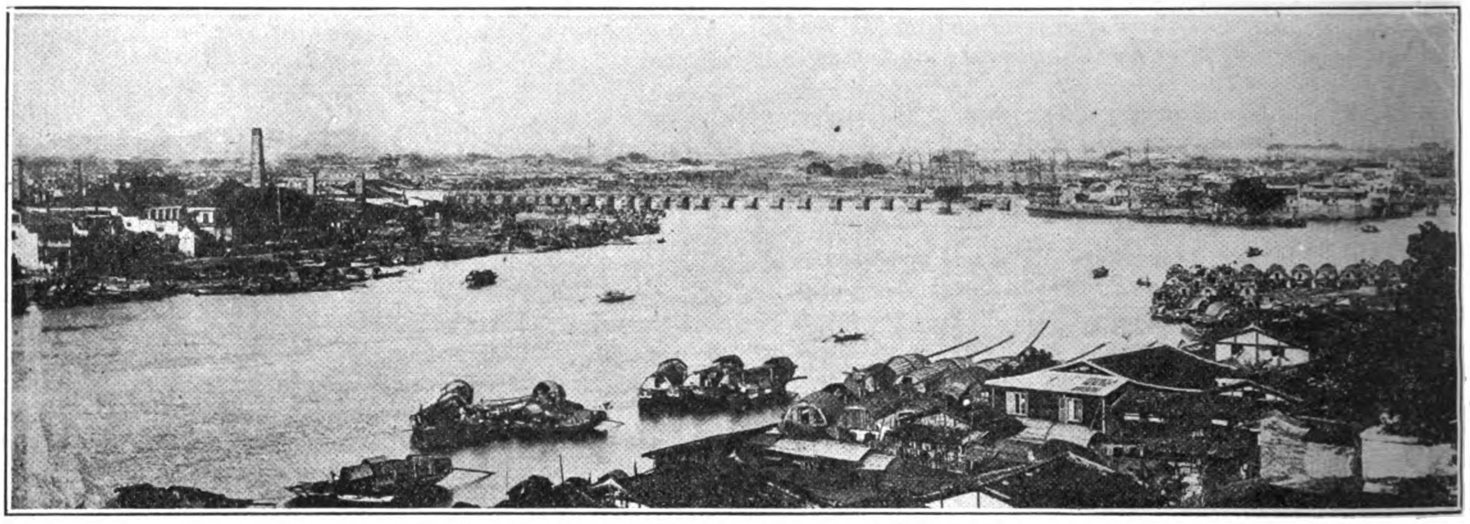
Eastern affairs occupy much of the world's attention now as ever. There comes a time when so-and-so's article on exploration in China is wanted, when something on the foreign policy of China would be of use, and if the mind refuses to obey consciousness then that matter can direct its attention to such a book as that above referred to and full details as to when and where the article appeared can be obtained. And if it is not something on the East which is required, if it has anything to do with the historical, political and economic sciences of the whole world, then its sponsor, date of appearance and other particulars can easily and quickly be found if the pages of the Library Association's volume are consulted. Such a book is a great boon to any and all who might be interested in the trend of world events for it gives them complete access to all that has been written and which can be called of importance in the fields of history, politics and economics, complete access in that the article required can be located, and thus obtained by communication with the owners of the issue in which it appeared. True, it is not good to rely greatly on mechanical means to assist the consciousness against its measure of strength with the mind, but there comes a time when they must be enforced, and at such time, and if the subject required has to do with the sciences as have already been enumerated, then no better guide can be consulted than "The Subject Index to Periodicals."

The Province of Fukien

By Rev. J. E. Walker, D.D.

ORIGINALLY the region now covered by Fukien (Foo-kyen) was a part of the Kingdom of Yueh; and under succeeding dynasties was sometimes part of China, and sometimes not. A century B.C. it formed part of an extensive independent region along the south-east sea coast, which was gradually brought again under Chinese sway. During the distracted times preceding the rise of the Tang dynasty, 618 A.D., it was again independent; but the Tangs recovered that whole south-east sea coast; and Fukien became a permanent part of the Middle Kingdom.

It is also styled in fine writing the Min province. Min was the name of a species of snake; and, according to Williams' Dictionary, this name contains an allusion to an ancient fable that the aboriginies south of the Meiling range were sired by a snake; and "*Seven Min* was a name for the old tribes of Fukien." This province lies *east* of an extension of the Meiling; but seemingly the Fukien tribes were classed with the Kuangtung (Canton) tribes. I once heard an earnest Chinese Christian tell his neighbors: "We of this region were the original foreign spooks."



Granite "Bridge of Ten Thousand Ages" at Foochow, Nantai

In the Foochow dialect Tang is pronounced Tong, and the men are called Tong-puo, i.e., Tang-fu, Tang men or husbands, while the women are styled Chü-niong, i.e., Chu-niang, Chu ladies or wives, as if the Tang soldiers had killed off the Chu men, married their widows, and settled down in Fukien. In the Shaowu region nearly all, if not quite all, the people are descendants of immigrants from north of the Yangtze river. People in different sections differ in looks as well as speech. Foochow folks have a lighter complexion than do the Shaowu people; and those who live along the south-east sea coast region have different features; and some wear turbans as do some Honanese.

In Fukien there are differences in traits of character as there are differences in dialects. At Foochow when a fire breaks out, the "fire hawks" rush in to plunder, while at Shaowu the neighbors rush in to put out the fire; and any down river man who should come prowling around would be roughly handled. In coming up the Min River, for the first one hundred and forty miles, if a boat is wrecked, it is plundered outright; but above this distance everything would be salvaged, and held for ransome at about one-third its estimated value.

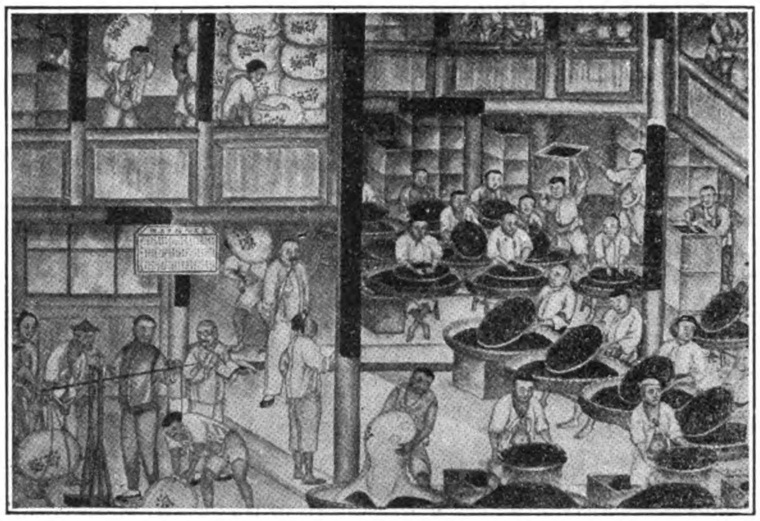
In the interior of the province we sometimes find a village which is named after folks of a certain surname, and yet there is now not one family of that surname living in the village; just as it would be with us if a certain village were named Parkersville and yet there were not a single Parker living in the village.

In the name Fukien, *Fuh-kien*, the *Fuh* is taken from the *Fuh* in Fuh-chou (Foochow), and the *Kien* from Kien-ning Fu, the most important inland city on the upper Min. As a rule the provinces of China take their names from some geographical feature or location; but Fukien is an exception to this; and doubtless the auspicious combination formed by the two words (Happiness Established), accounts for the choice; for Kien-ning Fu would only equal a suburb of Foochow, and is much smaller than Amoy and some other cities on the south-east sea coast.

The Chinese description of the world as three-tenths mountain, six-tenths sea and one-tenth field, well describes the mountains and fields of this province. A map of the rice fields of the Min valley would resemble the veins of a leaf. Up through all the valleys and along all the brooks and rills, wherever there is soil and running water, there the rice terraces are found. Sometimes they wind along and around the hillsides, a rod or so wide and many rods long. And as the valleys retreat, they climb higher and higher till the last spring is reached, or the mid-summer temperature becomes too low to mature the rice. The small plow and harrow slowly dragged along by one cow or buffalo for planting, and the sickle for reaping, are the only tools available for such rice culture. Yet inventive genius has solved harder problems of applying useful machinery than that which confronts us in the countless rice terraces of the Min valley and many other such regions.

As a rule hill side terraces produce only one crop a year; but through the winter and early spring they are kept covered with water; and often we see in them large patches of a luguminous plant which helps to enrich them. Hence full crops are grown in them from year to year with little other enrichment. On more level ground a crop of early rice is followed by one of beans; or the hills of rice stubble are heaped up in rows, those from one row or two on each side being piled up on a central row. Sometimes when three or four young farmers have finished such a job they make a frolic of it, and heap up the last lumps in pyramids a few feet high. On such ground wheat is sown as a winter crop, or rape seed in the early spring. Rape seed oil is much used in cooking. Near towns and cities the fullest use is made of night soil for two crops of rice, or crop after crop of some kind, the year round.

Hillside Tea Moving Citywards



Sifting, Weighing and Storing Crude Tea

Where two crops of rice are grown, the second crop is set out between the hills of the first crop and grows very slowly till the first crop is harvested; and then it shoots up very rapidly. Southern Fukien produces much sugar, and the raising of cotton is on the increase in various regions.

Fukien is subject to high floods. This is marked on the Min river which drains a wide spread valley. Once in Oregon a returned soldier from Manila remarked to me, "Folks here don't know what rain is." Fukien rains cannot equal Philippine rains. But they are a good second. History tells of an army that perished in the "Foochow marshes." These marshes are now very productive paddy fields, but are liable to severe damage through floods.

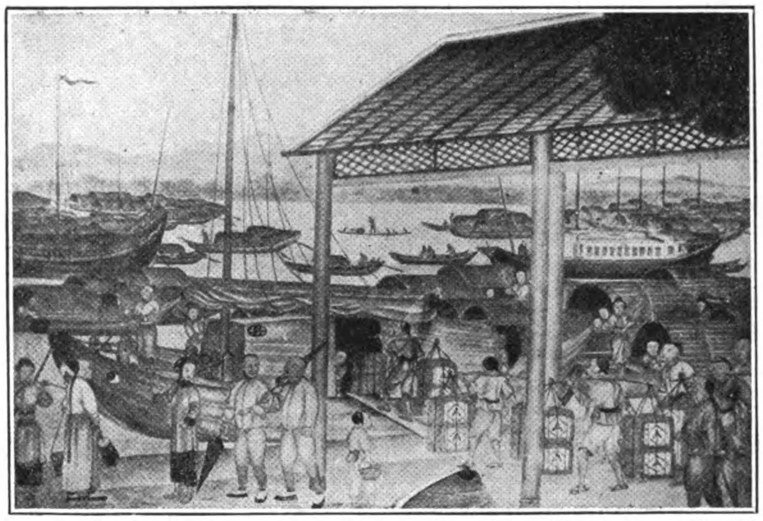
The Jesuites had quite a correct map of this province. Its main river is the Min which drains about one-half of it. At its mouth, high tide rises 19 feet; at Foochow, 30 miles up, it is half this, and is felt for about 20 miles farther up. Steam launches and house-boats ascend seventy miles above Foochow to Shui-k'ou; and it might be made navigable even up to Yenping 70 miles above Shui-k'ou.

At Yenping the river branches, and the northern branch coming down from Kienning Fu drains six or seven counties. The southern branch drains some eleven counties. Ten miles above Yenping the river again divides, the Sha or "Sand" river, which drains about 5 counties, coming in from the south. About forty miles above the mouth of the Sha river, at Shun-ch'ang city the central branch again divides, the Shaowu branch coming in from the N. W. It drains two and a half counties. The central branch of the Min comes in here from the west, and drains three and a half counties. It is *The Min*. A Japanese map of Fukien, which I have, omits this central branch. The Kienning branch has been called the Min; but this is like the case of the Mississippi River in America, which at its junction with the Missouri is much smaller than that river yet gives its name to the combined streams from there on to the sea.

In ascending from Foochow to Shaowu we find three belts of climate. The first belt extends from the sea to Shui-k'ou, 70 miles above Foochow, where the river cuts through an irregular chain of mountains, the peaks of which rise to the height of 3,000 to 4,000 feet above sea level. The second belt extends from Shui-k'ou to the mouth of the Sha River; and the third belt from there to the border of Fukien. The Banyan trees which give to Foochow the name of Banian City are frequent along the river to Shui-k'ou, but less so in the second belt. The last Banyan stands a little below the mouth of the Sha. From there on camphor trees take the place of the Banyan. Just back of Yenping stretches a high range which is a striking feature of the landscape as one comes up the river. The west branch of the river winds around the southern end of this range, passing through a narrow canon in which it "runs on edge" for a short distance, and at the narrowest point is hardly thirty paces wide. This is named the "City Gate Throat"; and in very high floods the rough ledges on either side cause such violent swirls as to make the Throat impassable. It is said that at the time of the Taiping invasion of Fukien a mandarin fleeing down the river was wrecked in the *Throat* and all on the boat perished except a babe. At that time also rich families escaping by boat were robbed at this point by local brigands.

About twenty years ago the manufacture of camphor gum was begun in this third belt. One of the first men to engage in it had cleared a thousand taels when the mandarin forbade the making of camphor without a license, and fined this man a thousand taels. Many trees are spared because of being not rich enough in the gum.

At Yenping city the official road leaves the river and crosses the mountain through a high gap called the San-ts'ien Pah-peh K'eng, "Three thousand Eight hundred Gorge," from the 3,800 stone steps which one must mount to reach the top of the gap. We have verified this number by actual count; and nearly 3,000 steps are one continuous winding flight. This is on the Yenping side. On the other side spurs give a gradual descent; and on these the growth of timber is the regular business of many villages. Some of these have the custom that when a boy is born, a hill will be planted thickly in rows with deal trees; yearly thinning out of the rows soon supports the child; and when the time comes for him to take a wife, sale of the timber furnishes the needed funds.

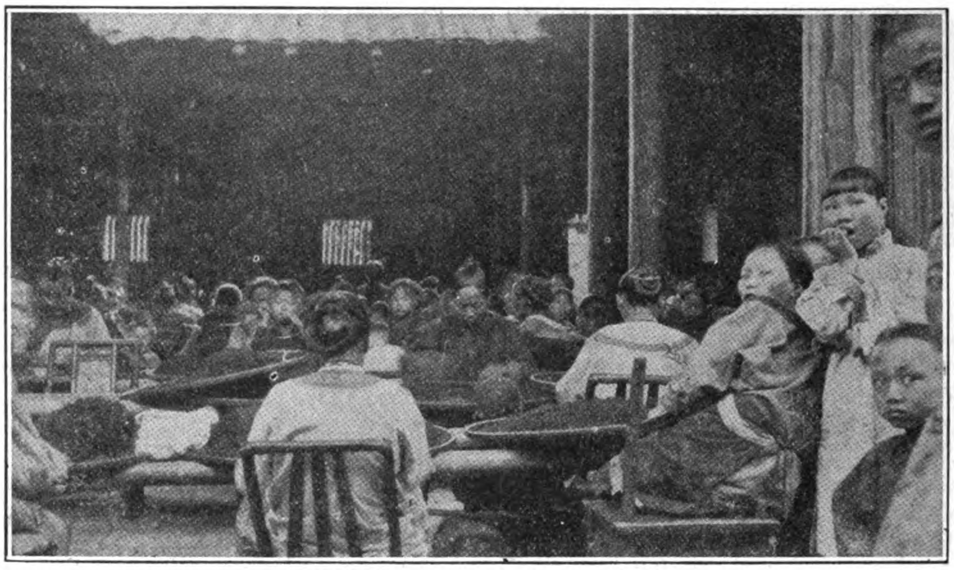


Loading Tea for Steamer at Pagoda Anchorage

The growth of timber has greatly increased during the last twenty years; and many old tea hills are now crowned with fine growths of young timber. There is now a very large export of the smaller poles from Foochow, and fresh

supplies are continually growing in the interior; but it requires considerable capital to grow large timber. In villages where timber growing is handed down from father to son, sons can reap from their father's planting, and plant for their sons to reap; but in new villages quicker returns are often necessary.

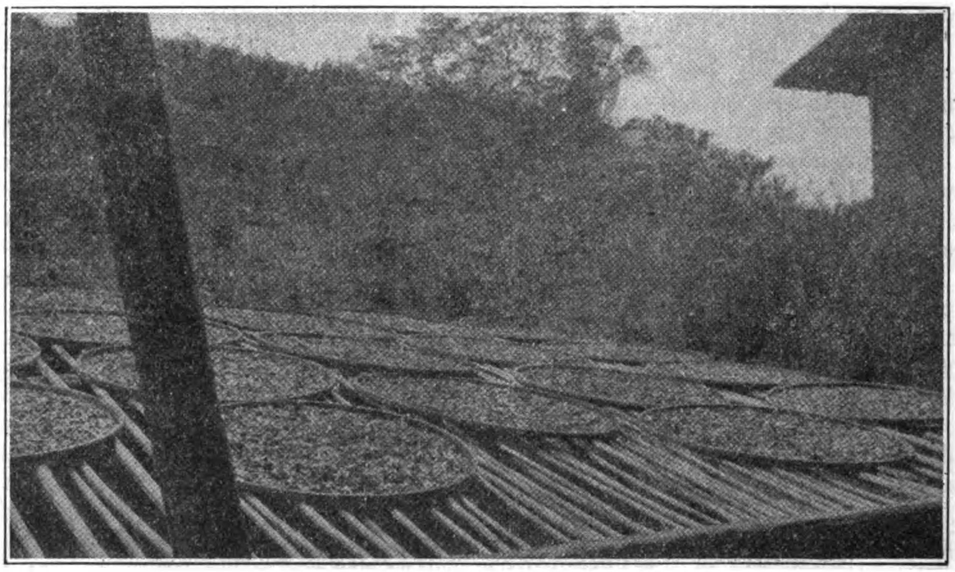
From Shui-k'ou upward the official road has many liquid amber trees (gum trees) lining it at intervals; and there is a story connected with these. Back in the latter part of the eighteenth century a woman came to Foochow as the daughter of a provincial treasurer, then again as wife, and still again as mother, of men holding this office. Coming across this province in midsummer she was moved with pity for travelers exposed to the heat, and had these trees planted along the road side. It is farther related that, when a girl, she wrapped a bed bug in a piece of paper and hid it in a hollow of a tree, and in her old age she found it there still alive; but it bit her, and the infection caused her death. Scientific experiment has proven that this insect can starve a year, and yet be ready for business when released.



Culling Stems from Tea Leaves

Snow and frost are quite rare at Foochow, but may be expected every year throughout the Shaowu belt. The isothermal line of summer heat in the Far East lies along the Yangtze Valley; and in Fukien its southern limit passes south of Foochow and north of Amoy. At Foochow the sea breeze mitigates the heat; but throughout the central and western parts of the Min Valley it is intense. The southern part of the province has cooler summers than does the northern, as well as warmer winters.

Literary graduates go from Foochow to various parts of China to hold office; but the people show no inclination to emigrate; in which respect they differ very much from those in the Amoy region. These latter style themselves Hok-lo (Hock-law), the *hok* being their way of pronouncing the Fu in Fukien, and the *lo* a suffix with somewhat the force of sir. In that region the drowning of new born girls was justified on the ground that many of the men went abroad and did not return to take Chinese wives. It was through these emigrants that Fukien first became known abroad; and they were taken as representatives of the whole province. Thousands who went abroad as coolies never were heard of again; and the report became quite prevalent that they were butchered, and their brains used in the manufacture of opium; and foreign opium was supposed to owe its superior quality to this admixture of brains. But this slander did not long survive.



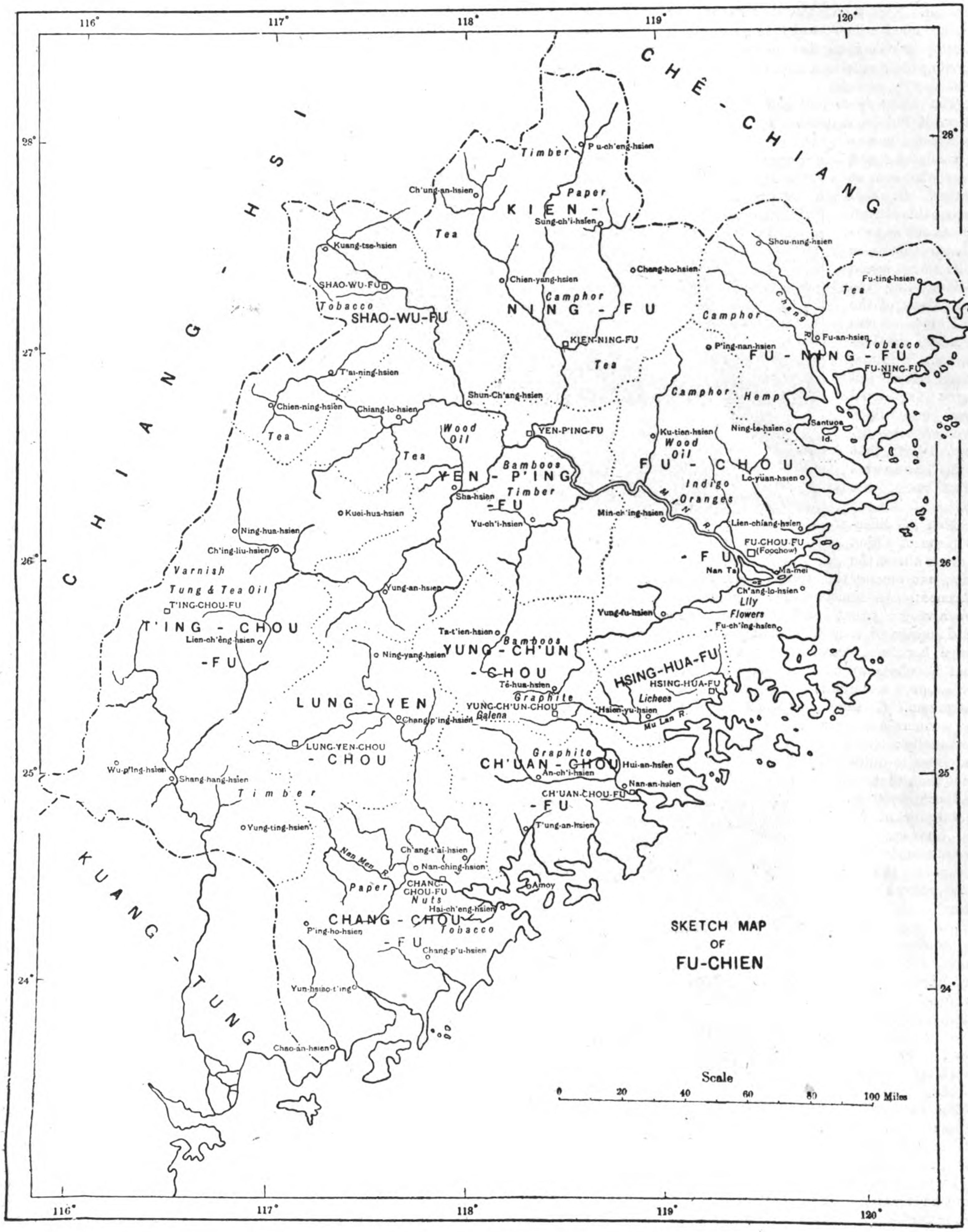
Tea Leaves just plucked Wilting in the Sun

In Foochow the "White" pagoda and the "Black Rock" pagoda in the southern part of the city are striking features. The former, on the east, is of brick and plastered with lime, the latter, on the west is of hewn stone. The White pagoda is well nigh 1,000 years old.

The streets of Foochow and foreign and official residences and the stores are lighted by electricity. The mountain streams near by will sometime furnish power for this and much more, though the time for this has not yet quite arrived. The long bridge with its huge granite stringers resting on granite piers is an object of much interest to visitors; but the piers dam up the water too much. It must soon give place to a steel suspension bridge.

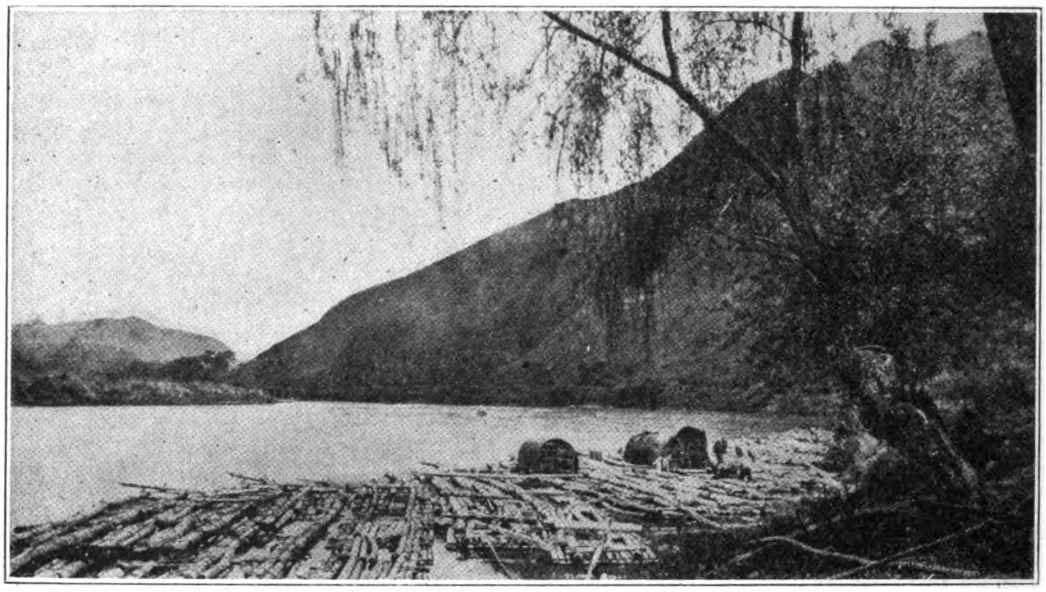
To many foreigners in China, a sampan is a sampan, and that's all. But a Foochow sampan is quite unlike a Shanghai sampan. It is larger, is a family boat; and is scrupulously neat. The sampan boat people are a distinct class, though the head dress of the women resembles that of the country women. A very large boat employed in freighting up the Min is a "Butterfly Boat" from its broad spread. These boats have crews of ten odd men, and travel three together so as to double teams on the rapids. They are very slow. The "Duck Boat," so called from its resemblance to a duck floating on water, has eight men, and is faster than the butterfly. But both are largely supplanted by "Sparrow Boats," which are a recent innovation. Their hulls are round bottomed; they have crews of two or three, and carry only a few tons. They go in flocks, dodge around through side channels, and are quite spry. On the Upper Min we have also "Rooster Boats" which are made of long slabs of camphor wood skilfully spliced together. They are deeper and narrower than duck boats, and bow and stern curve up somewhat like a gondola. The crews are Kiangsi men from over the Fukien border, they travel in gangs, have crews of four men, and are about as fast as duck boats.

A junk is a junk, but they show much variety in size and even in shape. The timber junks are especially interesting. The bulk of the timber which they carry is bound up into huge bundles on either side of the junk by means of bamboo cables of great strength


SKETCH MAP
OF
FU-CHIEN
CHÊ-CHIANG
CHIANG-HSI
KUANG-TUNG
KIEN-NING-FU
SHAO-WU-FU
FU-NING-FU
YEN-P'ING-FU
FU-CHOU-FU
T'ING-CHOU-FU
YUNG-CH'UN-CHOU
HSING-HUA-FU
LUNG-YEN-CHOU
CH'UAN-CHOU-FU
CHANG-CHOU-FU
Scale
0 20 40 60 80 100 Miles

made of coarse strips of spilt bamboo braided together by skilled workman. Each junk is towed down the river by a flock of sampans. They are good sailers; and it is quite interesting to watch a fleet of twenty or so making its exit from the mouth of the Min, and all spreading their sails to a fair wind for Shanghai or other northern ports.

The T'ing-chou prefecture which occupies the south-west section of Fukien is drained by the river which flows across the north-east corner of Kuangtung and enters the sea at Swatow. In descending this stream by boat one can experience the same thrills as he would in descending the Min. Many of the inhabitants of this prefecture are Hakkas, i.e., K'oh-kia, guest folks, immigrants; and hence one finds there two very different dialects, that of the immigrants and that of the natives.


Timber Rafts on the Upper Min

Men in different parts of China all dress about the same; but among the women there are many and marked local differences. At Foochow the large footed country field women have a very different head dress from the small footed women. If the daughter of a field woman bound her feet, she would also change her head dress to correspond. Back in the mountains about Foochow are a few Sie-p'o villages; and the head dress of their women resembles somewhat that of the field women and boatwomen. On the Upper Min in the Yenping prefecture the Sie-p'o women are seen occasionally; but their head dress is quite different from that seen in the Foochow region. In the interior of Fukien the Shaowu women have one style of head dress, while the women of the Shunch'ang and Tsiang-loh districts have a very different one, coiffure in which the hair is trained backward from the back of the head five or six inches, and is supported by a V-shaped silver frame. These two districts have quite similar dialects. T'ingchou Hakkas are scattered through this region, and their women were about the only large footed women met with till foot-binding was in good measure abolished.

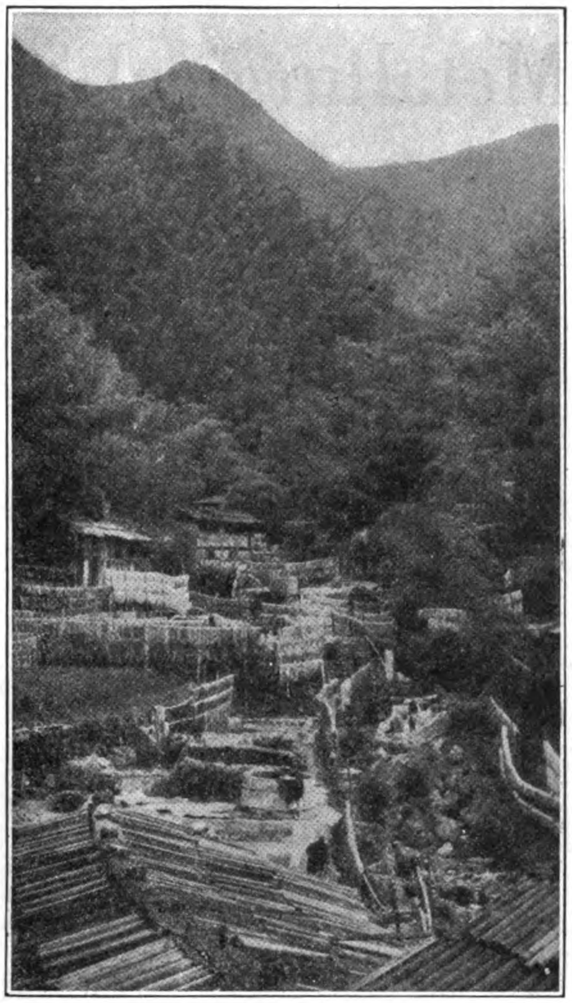
A Pontoon Bridge on the Upper Min

In the Shaowu region gold in small quatities is found in the mountain streams, and there are quartz ledges which would probaby pay for working. Iron and smokeless coal are also found. Limestone is common.

The history of tea in this province would of itself make a long article. The high price paid for it at the beginning, and the vast areas of virgin soil suited for its culture in the numberless valleys and hills of Fukien produced a state of things during each tea season like a gold mine rush. At various centres in the interior each tea season brought together numbers of men without families, while the resident families sought to earn enough in a few months to support them in easy idleness the rest of the year. In the earlier years Shaowu tea ranked very high; but later on it was so counterfeited, adulterated, etc., as to seriously lower its standing. Also old tea hills deteriorated in the quality of tea produced.

So far in this province the results of the revolution have been disappointing to the people. The establishment of the republic became quickly known even to the smallest mountain hamlet for the reason that every patch of rice is recorded and taxed; and since the change all tax collecting is done in the name of the republic. Every farmer has bamboo baskets holding each about 100-lbs., in which he carries produce from field to house and to market; and these have written of them in fine large characters by some good scholar the owner's name and the year of the emperor's reign in which they were made. But now all new baskets have on them the year of the people's kingdom in which they were made.

The thought of self-government begets in the minds of the people a new spirit of self-respect. The very chair coolies have caught something of it, and they have been especially benefitted by the prohibition of opium smoking. The first magistrate sent to Shaowu under the republic was a genuine reformer and initiated many improvements; but some of his successors have seemed to have had all the faults of the past with little of its responsibility to any higher authority. The bandits are much worse south and east of the central Min river and its western and northern head waters than they are in the rest of the province. Foochow is subject to the Northern government; but in the interior the Min river often marks the dividing line. The Shaowe region is divided between the two; but the North controls thu larger part of the province. But whatever may befall Fukien in the future it cannot go back. The people have learned that there are better ways, and are reaching out after these;



A Paper Factory of an Rh-shih. Boiling Vat in Foreground

and their present humiliation acts as a stimulus, spurring them on.

The raising of opium was quite common in the south-east parts of this province; and the prohibition of it met with much opposition. In the Hing-hua prefecture there was even a local rebellion. But the abolition of its cultivation prevailed after a time. Recently, however, there is found here and there an official who even compels the farmers to plant the poppy. They are forced to buy the seed, and then after a time to make advanced payment on the assumed profit that will accrue from its sale. This is not confined to the officials on either side; and the excuse given for it is need of money for soldiers' wages.

Mining Concessions in Borneo

FOR a long time past concessions have been granted in Borneo to private enterprise, as for instance, the Julia Hermina concession in 1855, which, however was withdrawn because it was not worked. The government itself exploited the Oranje Nassau collieries near Pengaron from 1848 to 1885, during which period the total yield amounted to 210,000 tons of coal. Later this concession was passed on to a private concern, but withdrawn again in 1892.

The large pecuniary losses sustained in working the several ore-fields, which are situated principally in the western part of the island, are still remembered, and it is not likely that Dutch capital will be attracted thither a second time.

Some day perhaps in the heart of this district a dredger may be found that never reached its destination, while the mention of such names as Sepingen, Benkajan, Alluvia, Bukit and Pondok, etc., is quite enough to call to mind again that period of suffering.

On the other hand, the formation of the country in the south-east is favorable to the development of petroleum, which has since the latter half of the last century grown into a prominent industry, the output during 1918 and 1919 amounting to more than a quarter of a million tons of crude oil.

Brown coal has also been found both in the south and east, and though widely spread, it is as a rule too fine and hardly worth the trouble of getting. However, because of the high prices ruling just now, many beds are being worked at a profit, even in the more distant regions; but when normal times return many of these will be abandoned.

In view of the nature and properties of this coal, transport to Europe will not be worth while, as similar fuel can be obtained in sufficient quantities on the European market. The several mines working during 1917, 1918 and 1919 have yielded, respectively, 311, 791, 275, 946 and 331, 477 tons.

Gold and diamonds, which have always stirred the human imagination, and have given Borneo the reputation of a country of exceptional mineral wealth, have as yet been found but intermittently, so that up till now, from a European point of view, but few localities are worthy of consideration.

Frequent requests for diamond concessions have been made and granted. The best known is the Gg. Lawak diamond concession, granted in 1881, which was exploited with capital from the Paris firm of Rothschild. After some years of fruitless work, the industry was abandoned.

In Borneo, as we stated, diamonds occur but intermittently, so that the production varies considerably. In 1917, 1918 and 1919 the production amounted to 590, 1,752 and 966 carats, respectively, with a corresponding value of f.51,300, f.116,360, and f.129,-600.

As to gold, the same may be said as with regard to the intermittent appearance of diamonds. After the failures experienced at the beginning of the present century, European capital withdrew from this industry and left it to the native population. For years a company was kept going, but after 1917 it went into liquidation. Nowadays Borneo gold is obtained from native diggings; and in 1919 gold only amounting to 756 grammes was obtained in the west and 5, 940 grammes in the southeast.

With regard to the small antimony mines that are being worked in British territory, and not on our side of the frontier, one must remember that there is good reason for exploiting antimony in the northern part of Borneo only. The name (Batu Sarawak—antimony polish) alone indicates that antimony may be found there in considerable quantities.

Notwithstanding, several spots containing antimony were also discovered in the Dutch part of Borneo. Nine of these were situated close to the Sarawak frontier, but on closer investigation only one was found to contain a small vein of antimony.

Iron ore is to be found in large quantities in many parts of Borneo, where it is being prospected for by private enterprise as also by the government.

The queer chemical composition of most of the Indian ores, to which the greater part of the Borneo ores also belong, demands a special method of manufacturing on a large scale. These difficulties have already been partly overcome, but the most economical way of working and manufacturing them is still to be found.

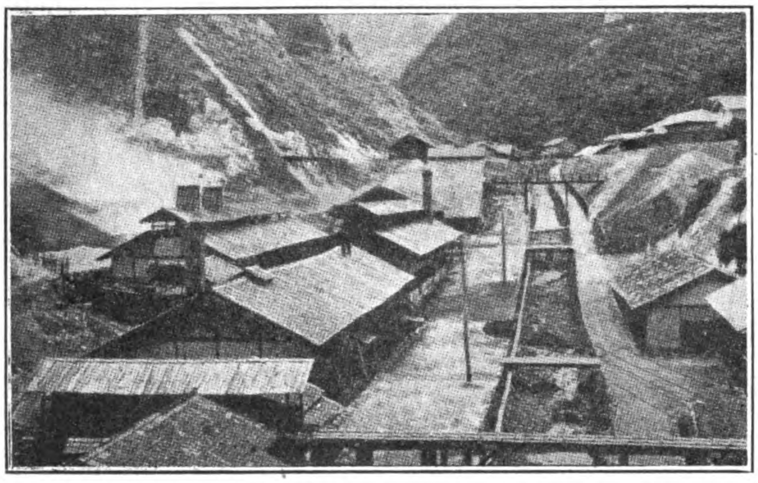
Finally, we would mention that copper, lead, zinc manganate, mercury, molubdine ores and platinum are also to be found in Borneo, but closer investigation shows that they only exist in small quantities.—From *The Dutch East Indian Archipelago*.

Prospective Business with Japan

A Japanese engineer who was in the United States in January to negotiate for equipment is authority for the statement that practically the entire Japanese railroad system of 8,000 miles is to be rebuilt, at a cost of about $200,000,000. The railways are to be made standard guage. In addition Japan is purchasing a large quantity of electrical equipment.

The article entitled "Hokkaido, The Northland of Japan" which appeared in our April issue is a reprint taken from the *Geographical Magazine*, acknowledgement of which we inadvertently failed to make at the time.

The Ore Mining and Metallurgical Industry of Japan



The Omori Copper Mine, Province of Iwami, the Fugita Co., Osaka

A GERMAN engineer, Mr. A. W. Paul, in summarising the metal development in Japan during and since the war writes in the *Compressed Air* Magazine that when at the beginning of the war the prices for metals declined affecting adversely the respective industries, gold mining experienced an enhanced activity and the output of this precious metal was raised from 11,500 pounds in 1913 to 17,000 pounds in 1915. However, when in 1915 the high business prospects in the metal market set in with enormously accruing profits, the gold output became slacker and it was not till 1919 that an increased activity showed itself, for which the Hokkaido washing plant has been mainly responsible. Not more than two per cent. of the gold output of the world is furnished by Japan.

Also, in silver, Japan furnishes not more than perhaps two per cent. of the world output. Since the price of silver went up by leaps and bounds during the war, silver production proved to be a most profitable business. The principal gold and silver yielding mines with their output for the year 1917 are given hereunder in kilogrammes :

	Silver	*Gold*
Kuhara Mining Co.	60,000	2,302
Mitsubishi & Co.	48,000	475
Furukawa & Co.	31,000	195
Fujita Mining Co.	25,500	742
Mitsui Mining Co.	7,500	862

Platinum is extracted in small quantities and principally at Hokkaido, likewise the metal osmiridium. Of the latter, the yearly output amounts to about 20 to 40 pounds. The price of plating in 1914 being about four yen per gramme, it reached in 1919 the enormous figure of 13 yen. The imports of platinum in the shape of bars, plates and wires was : 1913, about 390 pounds ; 1914, 145 pounds ; 1915, 125 pounds ; 1916, 280 pounds ; 1918, 20 pounds.

Japan's most important ore is no doubt copper. The tonnage production of this metal being in :

1910...	49,000
1911...	53,000
1912...	62,000
1913...	67,000
1914...	70,000
1915...	75,000
1916...	100,000
1917...	108,000
1918...	92,000
1919...	80,000

The principal copper firms are Furukawa & Co., Kuhara Mining Co., Fujita Mining Co., K. Sumitomo Mines, Mitsubishi & Co. and Tanaka Mining Co. The profits these firms made during the war were said to have been enormous.

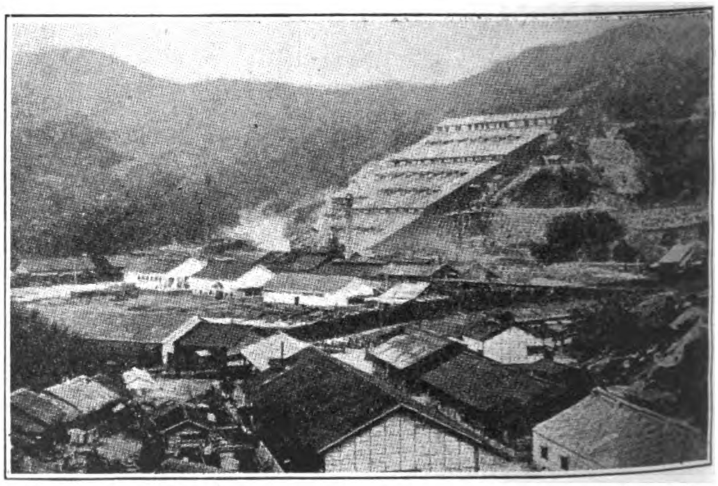
The Japanese exports of copper during the war were as follows :

	1914	1915	1916	1917	1918
Countries	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
China	14,129	1,454	1,514	5,009	7,540
Asiatic Russia	—	30,363	33,809	10,940	141
British India	2,489	1,240	87	4,055	2,475
England	6,922	12,445	14,581	24,933	5,497
France	3,543	4,021	4,242	18,266	8,647
U. S. A.	4,138	7,958	2,967	2,659	38
Germany	2,100	—	—	—	—

The reason for the greatly reduced export figure for the year 1918 and which was still enhanced for 1919 is chiefly due to the fact that owing to the cessation of hostilities the various countries having piled up large stocks of this useful metal were trying to get rid of them. The mines in Japan were forced therefore to greatly reduce their production.

The zinc industry experienced a tremendous boom during the war, the production in 1918 being about ten times that of 1914. Before the war Japan exported about 30,000 tons a year. There were two big smelteries at the time, viz., the Ohmuta Smeltery of the Mitsui Mining Company, and a smeltery of the Osaka Company in Settsee. Before the war most of the exports were shipped to Hamburg and Antwerp. In 1916, the production of zinc amounted to 53,000 tons and in 1917 to about 80,000 tons.

The output of lead is unimportant and does in no way satisfy the home demands. Before the war it was about 4,000 tons a year and 80 per cent. of this was worked by the Kamioka Zinc Lead



The Zuibo Gold Mine in Northern Formosa. The Fugita Co., Osaka

Ore Mine of the Mitsui Mining Company. The exports and imports during the war period in tons were as follows :

	Lead Production	*Lead Imports*
1914...	4,600	16,139
1915...	4,800	15,820
1916...	11,490	22,361
1917...	15,800	16,500
1918...	10,700	36,300

The principal providers of lead ore were China, the United States and Siberia ; and of lead metal Australia and the United States.

Tin production is quite unimportant ; Japan gets her chief supplies from the Straits Settlement.

Nickel is not produced at all in Japan, and the total of the country's requirements has to be imported. Whilst before the war England was the principal source of supply, and to a small extent also Germany, the United States has become now one of the chief sellers. French engineers are in Japan with a view to installing a large plant for the working of nickel.

Aluminium has not been produced yet in Japan, although the important aluminium ores, bauxite and kryolite, are to be found in the country. Up to the war the demand for aluminium was very small, the imports having been about 500 tons a year from Europe and the United States, but during the war, and especially in the last two years, imports were greatly increased.

The production of antimony regulus in Japan rose from thirteen tons in 1913 to more than 10,000 tons in 1916, but the raw ore was chiefly imported from China and worked in Japan. The metal was principally used for the production of amunition ; hence the greatly increased demand.

Chinese Subsidiary Currency

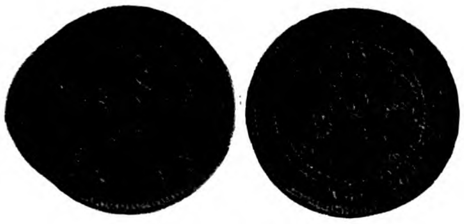
Shrinkage Hampers Forward Influences

SMALL coin is the trade medium of the masses. Its value, when fluctuant, affects the buying and selling of retail commodities to an extent that must later reflect on the imports and exports of any country. Hence it is that a study of the matter must be of especial interest to traders in the Orient. Their business must grow or decrease as a result of enhanced coin valuation or depreciation. A thesis on the subject which comes from the pen of Mr. Donald McColl, general manager of the Shanghai Electric Construction Company, Ltd., deals very clearly with this subject of subsidiary coins. It follows a study made about two years ago and the present investigation has been made because of the appearance in circulation of considerable quantities of new copper coins, with further depreciation. Mr. McColl, in dealing with one-cent coins, writes: Since the early part of 1919 when the new coins began to appear in Shanghai, daily records have been kept by the Shanghai Tramways (Foreign Settlement) of the proportion of such new coins in the revenue. The following table is based on these records :—

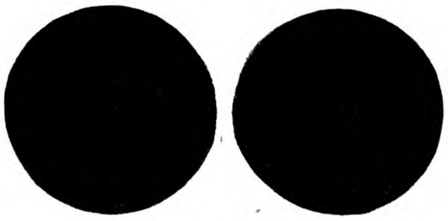
PERCENTAGE OF NEW COINS (MOSTLY LIGHT-WEIGHT) IN SHANGHAI TRAMWAY RECEIPTS

	1919	1920	1921
January	—	5.24%	10.04%
February	2.70%	6.14%	11.84%
March	3.44%	6.98%	
April	3.28%	6.89%	
May	3.32%	7.64%	
June	3.63%	7.35%	
July	4.07%	7.68%	
August	4.83%	7.73%	
September	5.05%	7.68%	
October	5.12%	7.56%	
November	5.17%	7.50%	
December	5.18%	8.44%	

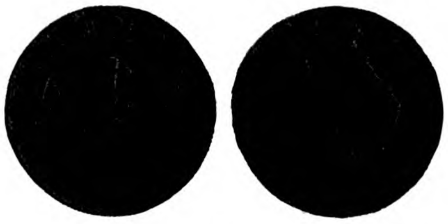
On March 12, 1921, the ratio was 13.06%.



Monarchy Coin
(best type)

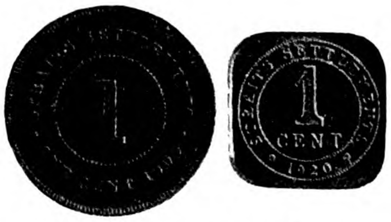


First Issue Republic
(2nd best type)



Republican coins issued since 1918
(rubbish)

Hunan Coins. Hankow Mint
2-cent



Straits Settlement Coins
The round coin is sometimes collected by Shanghai Tramway conductors

About the beginning of February this year a consignment of 1,000,000 new one-cent copper coins was brought to Shanghai from the Nanking mint. The introduction of these coins into circulation has accelerated the increasing ratio of depreciation. The design of this million coins is new, without any foreign wording as on the older coins and with various minor changes. The new coins are even more poorly embossed than previous issues and are extremely crude and rough. They are about 10 per cent. lighter than the one-cent coins turned out in the earlier years of the republic. Small supplies of these new copper coins are being constantly smuggled into Shanghai. (Over 93,000 one-cent copper coins were recently seized by the Shanghai customs ex a Japanese steamer from Hankow).

As the copper coins in circulation at the end of 1918 are doubtless still in use, the figure of 13 per cent. (as above) may fairly be taken to represent the approximate *increase* in the 1-cent copper coins in circulation in Shanghai since the end of 1918. In certain parts of China, the additions to the coinage appear to have been greater because of the introduction of 2 cent coins as well as fresh issues of 1 cent coins. In an article in 1915, I estimated the number of 1 cent coins then in circulation in China at 22,000,000,000. From the foregoing data, it is evident that, since the beginning of 1919, the additional issues must have amounted to at least 14 per cent. of this figure, equal to 3,080,000,000 copper cents.

Two-cent Coins

In my 1915 article, I referred to the proposal to introduce 2-cent copper coins as "a dangerous and retrogade feature of the Currency Law." That these apprehensions were not unfounded is shown by the fact that, at Hankow, where two-cent coins are in circulation they are more heavily depreciated than one-cent coins, the rate being over 162 to the dollar as against 151 for one-cent coins.

The ratio of intrinsic value to face value of the two-cent coin is only 48.8 per cent. as against 58.3 per cent. for the one-cent coin. Two-cent coins have not appeared in circulation in Shanghai.

The Motive—Minting Profits

The resumption of minting activity coincided with the fall in the silver price of copper ingots following the close of the war. The present position is as follows :—

	1-cent coin	2-cent coin
Weight (candareens)	17.72	29.20
Intrinsic (or metal) value computed on		
Copper (93 per cent.) per ton ...	$700.56	$700.56
Zinc (7 per cent.) per ton	279.89	279.89
Minting labor, etc., per 10,000 coins	9.50	17.00
7 per cent. interest on Capital Investment=per day	160.00	160.00
Face value	1.000	2.000
Depreciation	0.301	0.767
Circulating rate	0.699	1.233
Intrinsic (or metal) value	0.583	0.976
Minting profit	0.116	0.257
Ratio of intrinsic (or metal) value to face value	58.3%	48.8%
Circulating rate (cents per $) ...	143†	162*

† Average of different cities.
* At Hankow.

The minting profit on 3,080,000,000 copper cents at the rate for 1 cent coins as above would be over $3,500,000. This profit is very large on the small working capital involved, due partly to the capital being turned over again and again in the course of the year.

The lower ratio of intrinsic value of the two-cent coin is a special danger : it makes overminting for profit still more attractive and gives even greater encouragement to counterfeiting than the one-cent coin. For the sake of minting profits, the Chinese mints have been aggravating the bad state of the currency whenever opportunity offered by—

(*a*) Excessive issues of coins.
(*b*) Reducing their metal value.
(*c*) Introducing low-value two-cent coins.

At the present production costs (in silver) the 1-cent coins would have to depreciate to 171.5 cent to the dollar and the 2-cent coins to 204.99 cents to the dollar before minting profits would disappear. Thus :—

	1-cent coin	2-cent coin
Face Value	1.000	2.000
*Depreciation	0.417	1.024
Circulating rate	0.583	0.976
Intrinsic (or metal) value	0.583	0.976
Minting Profit	Nil	Nil

* 1-cent 4.17 per cent. or 171.5 cents to dollar.
2-cent 51.2 per cent. or 204.99 cents to dollar.

With a 20 per cent. increase in the present silver price of copper ingots, the minting of 1-cent copper coins would cease to show a profit ; with a 27 per cent. increase, the minting of 2-cent coins would cease to show a profit.

The Evil Effects

The immediate effect of the introduction of all this additional coinage, on the top of an already superabundant circulation, has been to increase the ratio of depreciation. The steady increase in the depreciation of copper coins in Shanghai during the past two years in shown by the following table :—

	1-cent coins (number per $)		
	1919	1920	1921
January...	132.12	136.27	141.35
February	134.67	135.06	143.50
March	135.43	137.18	
April	135.24	137.59	
May	135.31	138.08	
June	135.86	138.31	
July	135.95	139.34	
August	136.19	139.75	
September	136.43	139.65	
October...	136.56	139.87	
November	136.51	140.42	
December	136.18	141.36	

On March 12, 1920, the rate was 145.37 cents to the dollar.

The losses of the Shanghai Tramways (Foreign Settlement) in converting its revenue in depreciated subsidiary coinage into dollars have been :—

(From 5th March) 1908...	$ 50,812=14.77%
Year 1909...	116,089=24.01%
„ 1910...	155,184=24.91%
„ 1911...	168,848=22.93%
„ 1912...	239,375=24.55%
„ 1913...	258,810=23.19%
„ 1914...	316,670=26.04%
„ 1915...	362,368=28.58%
„ 1916...	387,510=26.72%
„ 1917...	354,776=23.26%
„ 1918...	390,377=23.95%
„ 1919...	521,385=26.21%
„ 1920...	658,572=27.93%
January, 1921...	60,145=29.27%
February, 1921...	62,012=30.38%
Total	$4,102,933

For week ended March 9th, 1921, the percentage of loss was 31.04 per cent.

The depreciation affects the whole of the country, some parts more severely even than Shanghai. The following are the average circulating rates in 12 cities, in December, 1918 and February, 1921.

	Dec., 1918.	Feb., 1921.	Increase.
Amoy	132.77	143.30	10.53
Changchow	133.31	143.30	9.99
Chefoo	134.70	145.70	11.00
Chinkiang...	134.07	144.40	10.33
Foochow	131.90	143.60	11.70
Hangchow...	132.00	143.00	11.00
Hankow 1 cent	138.47	151.50	13.03
Hankow 2 cents... ...	148.10	161.20	13.10
Nanking	134.30	145.00	10.70
Ningpo	131.73	143.50	11.77
Shanghai	*132.57*	*143.70*	*11.13*
Soochow	132.65	143.00	10.35
Tientsin	137.82	148.40	10.58

It will be noted that Hankow (adjacent to an active mint and with 2-cent as well as 1-cent copper coins) has the heaviest depreciation of all and that the depreciation of the 2-cent coins is heavier than that of the 1 cent. The depreciation is now heavier in Shanghai and throughout the country than it has ever been.

An American political economist wrote, years ago, "wages rise much more slowly than goods and never proportionately because laborers do not well understand the situation and never act quickly enough to insure themselves; and so they are always great sufferers from a depreciated currency."

In China, vast numbers of the people are paid in copper coins and adjustments have not been made which compensate for the depreciation. The purchasing power of the people, therefore, has been reduced. The position is aggravated by higher prices for food and clothing. In a country like China, with the bulk of the population poor even at the best of times, a depreciated and further depreciating subsidiary currency, which is necessarily the main medium of exchange, must tend to intensify the struggle for existence. Reduction in intrinsic value and additional issues of coins are merely subtle methods of robbing the people. With actual famine and pestilence, the people can ill support the added burden of exploitation by the further watering of the currency. The depreciated coinage robs them every time they make a purchase.

An Oxford professor of political economy writing on depreciated currency, said: "As long as an inconvertible currency lasts, it never ceases to harass trade and every commercial dealing between man and man. The harm is renewed day after day, week after week, year after year, . . . a bad, unsound, untrustworthy currency persecutes society at every turn and brings loss on all but gamblers." To quote further from the American economist already referred to, "All classes of the people are ultimately great losers in wealth and reputation from the destruction of the stable measure of value." China's depreciated currency restricts trade and tends to dry up the springs of activity. Currency shrinkage shrinks other things. A currency such as China now has not only hampers forward influences; it puts back the clock.

Schemes for the establishment of new undertakings in China have to contend with the difficulty of very high prices for imported equipment. When the revenue of the undertaking has to depend upon a depreciated subsidiary currency, liable to further serious shrinkage in value at the will of profit-seeking mint officials, the risks to capital are materially increased. These risks equally affect the development of existing undertakings whose revenue is in subsidiary coinage. Obstacles to the initiation of new enterprises in China must retard its opening up and be prejudicial to the interests of the people.

Reduction in the purchasing power of the people, through increasing depreciation of their coinage, must necessarily tend adversely to affect trade with China and, therefore, foreign undertakings which produce for Chinese markets.

From the point of view of the Chinese government, the policy of watering the currency is, of course, equally wrong. Initial profits on minting are soon far more than lost in the reaction upon the Government of the reduced paying power of the people consequent on the increasing depreciation of the coinage. The government of a country and its people rise or fall together. Their interests cannot be separated. If depreciation of the coinage reduces purchasing power, duties and taxes must suffer. China's currency policy has been the worst both for the government and the people: it is fraught with the gravest dangers, economic and other.

Non-Observance of China's Treaty Obligations Regarding Currency

In Article 2 of the British Commercial Treaty of 1902 with China (commonly called the Mackay Treaty), the Chinese government gave the following undertaking:—

> "China agrees to take the necessary steps to provide for a uniform national currency which shall be legal tender in payment of all duties, taxes and other obligations throughout the empire by British as well as Chinese subjects."

Certain Commercial Treaties of other countries with China contain clauses to the same effect. Not only, however, have no practical steps been taken to fulfil these obligations but much that has been done during the 19 years since the obligations were undertaken has only aggravated the condition of the currency. In 1902, there do not appear to have been any one-cent copper coins in circulation. In 1904 there were so few that they circulated at a premium, the rate being between 80 and 90 cents to the dollar. Early in 1914, the law for the national currency appeared. This was heralded as a guarantee of early and adequate reform of the whole currency. In my 1915 article, I referred to the fact that the new law, which provided for the minting of token coins (copper and nickel) made no provision for their acceptance at face value by government institutions. I drew special attention to the danger of the provisions in the law for 2-cent copper coins of low intrinsic value and 5-cent nickel coins of a still lower ratio of intrinsic value to face value.

The tendency is for people to prefer the coins of which they can obtain the greatest number to the dollar. In other words, the heavier the depreciation of a coin the more is it likely to be used for small payments. Owing to their much lower proportion of intrinsic to face value, the nickel coins provided in the law would tend to circulate at more cents to the dollar than the copper coins. Popular preference, therefore, aids the policy of exploitation by the mints.

In the explanatory notes accompanying the law it is stated, "we have now made the nominal value of the token coins 30 per cent. higher than the intrinsic value." This refers to subsidiary silver coins. There is no reference to a corresponding percentage for copper coins, but weights are specified for the latter, and, although the coins now being minted do not differ greatly from these weights, the nominal value of the 1-cent coins is 72 per cent. higher than the intrinsic value and the 2-cent coins 105 per cent. higher. I pointed out that wide differences between intrinsic and face value would make both official minting of coins and counterfeiting unduly attractive, and I tried to show that, in a country of the backward state of development and administration of China, anything approaching the considerable proportion of token margin found practicable in Western countries of complete and consolidated administration would be unsafe. The law provides for recalling the old coins and reminting them to the new standard, and the explanatory notes refer to their circulation at face value, without discount. In the notes it is also laid down. "The government will endeavor to ascertain the status of supply and demand for token coins and will mint just as much as it would require to meet the needs of the people." Although the intrinsic values of the coins in relation to face values as provided in the law are

unduly low for conditions in China, if the other provisions for recalling and reminting the old coins and limiting the issue to "the needs of the people" had been observed, the serious aggravation of the condition of the currency which has taken place since the law was published would have been avoided. There is no evidence of any of the sound provisions of the law being carried out to mitigate the effects of the unsound provisions. New coins continue to be turned out as *additions* to the already excessive quantities in circulation; coinage is *not* withdrawn for reminting because there would be no profit to the mints in doing so; and the customs returns show imports of copper obviously intended for the mints. Moreover, the new coins are of such extremely poor manufacture that counterfeiting is easy and cheap.

No Protection of Token Coins

There must, of course, be some token margin as a protection against demonetization in the event of a considerable rise in the market price of the metal. To avoid encouragement of over-minting and counterfeiting, the token margin should not, in China, be more than is necessary to safeguard against melting down. The basic essential of a token coinage is the government's absolute guarantee of the face value of the coins. The Chinese government has no regard for this. It issues token coins as if they were *ad-valorem* coins containing their own protection. The coins are turned out cheaply and roughly and sold to native banks as a commodity for profit; there is no pretence that they are to meet any currency need of the people; and they are issued without any protective measures or guarantee and left to find their circulating rates according to their metal values and to supply and demand. Every addition to the quantity reduces further the circulating value of the coins. When the falling circulating value approaches the bare intrinsic value, the ratio of profit would cease to be attractive to the mints, and nickel token coins (also provided for in the law) would probably then be exploited in a similar manner.

The Requirements

The provisions which ensure, in Western countries, the maintenance of token coins at face value are, of course, even more necessary in China. These are mainly :—

(1) That the coinage is issued by the government, and has the *support* of the government whose institutions always accept it at face value.

(2) That the quantities of coins issued are regulated according to actual requirements.

(3) A legal tender limit.

(4) That the coins are of such fine design that elaborate machinery and the most careful workmanship are required to turn them out. Counterfeiting is thus rendered difficult and expensive.

(5) Severe penalties for detected counterfeiting or the importation of counterfeit coins.

The backward state of China makes it impossible for the administration to protect so large a token margin as in advanced Western countries and the token margin should have a limit suitable to the conditions in China.

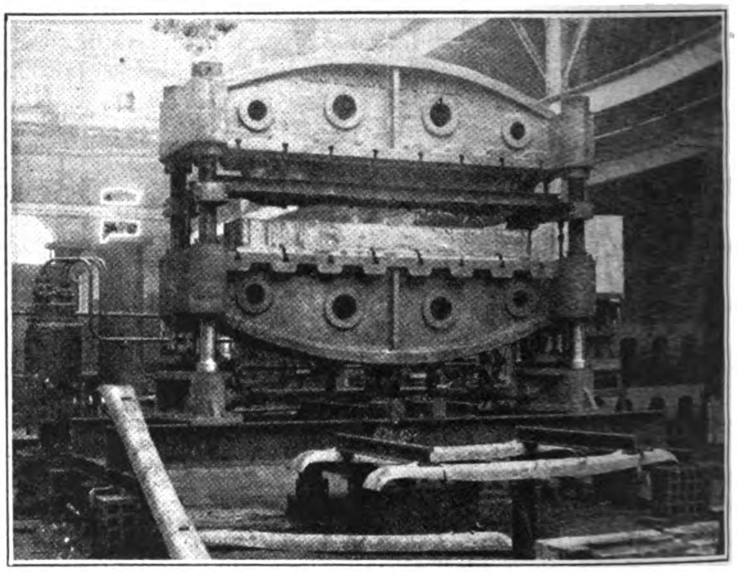
The currency policy in China to-day is more dangerous than it appears to have been for years, and, unless promptly remedied, can scarcely fail to have disastrous and far-reaching consequences. The immediate requirement is the absolute stoppage of minting of new coins. The urgency and importance of this cannot be over-emphasized. To ensure stoppage of minting, probably the importation of copper discs would have to be prohibited and a suitable tax imposed on the importation of copper not in manufactured forms.

The scheme for the minting of Chinese silver dollars under foreign supervision to ensure the establishment of the dollar as a generally acceptable standard should be the first important step towards complete currency reform. The success of this scheme would depend mainly upon foreign supervision. If foreign experts could also be utilized to recommend revision of the defective currency law in the light of actual conditions and experience, and, under the provisions of the law so amended, to supervise reminting and the general reorganization of the currency, an incalculable boon would be conferred upon China. After close attention to this subject for over 12 years, I see no other way in which China's Treaty obligations of 1902, in the interests of the Chinese people and all who have dealings with China, are likely to be fulfilled. It would appear to be unwise and against the interests of China to lend money to its government unless definite arrangements are made for the reform of the whole currency under foreign supervision.

Currency reform is urgent as a safeguard to what exists, an insurance against complete break-down: it is also a pre-requisite to many other reforms and to the development of the country in the interests of China and the rest of the world.

In the Vanguard of Civilization

HISTORY is a record of past progress or deterioration. As humans observe it the world is progressing in spite of happenings in which the hand of deterioration is plainly evident. Wars destroy as do famines and disease but creation is the predominant instinct of man and in this direction he makes marked progress. Apart from the advances made in art, literature and the sciences it is said that progress is the distinctive note of mechanical science, there being no standing still in workshop development. If the history of the firm Henry Berry & Co., Ltd., hydraulic engineers and specialists of Leeds, can be taken as a criterion then there can



Sleeper Press

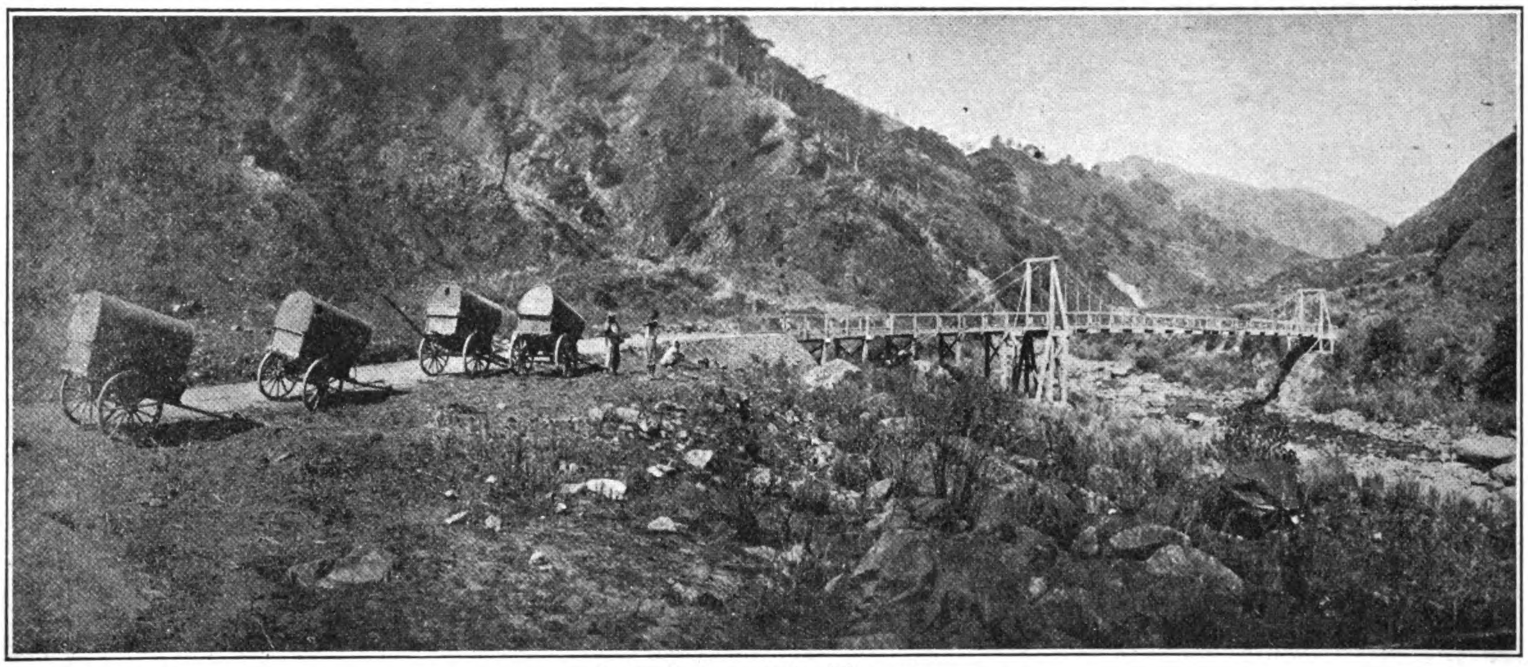
be no question but that this statement is correct. Commencing some forty years ago as manufacturers of hydraulic machinery and special heavy machine tools they have developed their works first by manufacturing frame presses for pressing motor tractor and commercial vehicle frames, also riveting machines for riveting up the frames, and tyring presses for fixing solid tyres to wheel rims, until now they manufacture all important types of modern machinery. Unquestionably, a visit to the works by engineers and buyers in England on furlough will disclose such engineering progress as makes this firm so well known and reliable.

Petroleum in the Philippines

By W. D. SMITH of the Bureau of Science

HISTORY.—The first mention in geological literature, so far as we know, of gas or petroleum in the Philippines is found in the description of the Island of Panay by the Spanish geologist, Abella, in the year 1890. In 1898, an oil well was being dug on the estate of Smith Bell & Co., British concern, near the town of Toledo on the west coast of Cebu. In this year, an insurrection broke out against Spanish rule and the drillers were driven from the well, which has been abandoned ever since. It is now practically as the insurrectos left it ; that is, choked with rubbish which would have to be cleared away before operations could be renewed.

About 1910, a number of Americans became interested in the petroleum deposits long known by the Filipinos to occur on the peninsula of Tayabas in the southeastern part of Luzon, which were apparently unknown to the Spaniards. Two wells, 117 and 300 feet (35 and 91 meters), respectively, were dug from which a few gallons of oil were pumped, but nothing of any great importance has been done since then, except to keep up assessment work on the properties. At the end of 1917, there was considerable excitement in the Islands over the discovery of oil in the Lanao region of Mindanao Island. The existence of petroleum on that island was known to geologists of the bureau of science as early as 1908, but they could not visit the localities owing to the state of the country.



A Road Through the Mountains

In 1919, Act 2814 was passed by both branches of the Philippine legislature, and approved by the governor-general on March 4th, providing for the creation of the National Petroleum Company.

In August, 1920, the Philippine legislature passed the following act providing for the exploration, location, and lease of lands containing petroleum and other mineral oils and gas in the Philippine Islands :

AN ACT TO PROVIDE FOR THE EXPLORATION, LOCATION AND LEASE OF LANDS CONTAINING PETROLEUM AND OTHER MINERAL OILS AND GAS IN THE PHILIPPINE ISLANDS.

Be it enacted by the senate and house of representatives of the Philippines in legislature assembled and by the authority of the same :

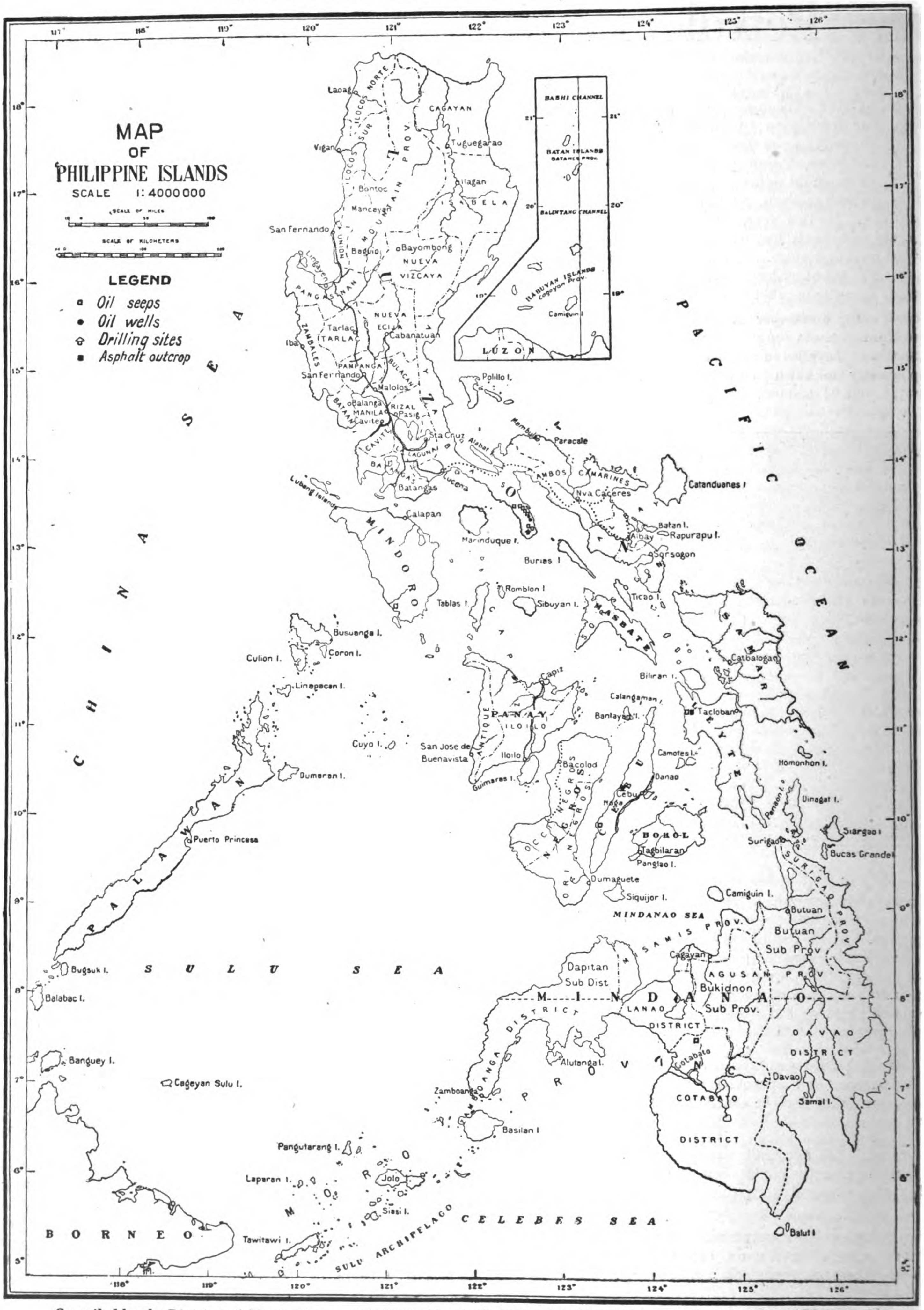
Section 1. All public lands containing petroleum or other mineral oils and gas, on which no patent at the date this act takes effect has been issued, are hereby withdrawn from sale and are declared to be free and open to exploration, location and lease by citizens of the Philippine Islands or of the United States and by associations and corporations wholly composed of citizens of the Philippine Islands or of the United States or both ; *Provided, however,* That parties having heretofore filled claims for any lands containing said minerals shall be given preference to lease their respective claims, provided they file a petition to that effect within six months from the date of the approval of this act.

Section 2. All such lands may be leased by the secretary of agriculture and natural resources in the manner and subject to the rules prescribed by the council of state ; said lease shall be in blocked or tracts of not more than four hundred hectares for each individual, and not more than twelve hundred hectares for any association or corporation : *Provided, however,* That at the discretion of the secretary of agriculture and natural resources, more than one lease may be granted to any one person, association, or corporation.

Section 3. Leases under the provisions of this act shall be for a period of not more than five years each, subject to renewal on such terms and conditions as may be authorized by the council of state, and no such lease shall be assigned or sublet except with the consent of the secretary of agriculture and natural resources, and in this case, only to such persons or associations of persons and corporations as have the qualifications required of lessees.

Section 4. The exploration and exploitation of deposits of petroleum and other mineral oils and gas located in private lands shall be made only by persons, associations, or corporations having the qualifications required of lessees and under such terms and conditions as may be prescribed by the secretary of agriculture and natural resources and approved by the council of state : *Provided, however,* That any location, occupation, or use by locators

PRINCIPAL OIL LOCALITIES IN THE PHILIPPINES



Compiled by the Division of Mines, Bureau of Science. Manila, P. I. March, 1921. Under general supervision of W. D. Smith

of any private land for the purpose of exploiting and working any mineral deposits pursuant to the provisions of this act shall be conditioned on just compensation.

Section 5. When this act shall have been approved by the president of the United States, as provided in section nine of the act of congress of August twenty-ninth, nineteen hundred and sixteen, such fact shall be made known by proclamation of the governor-general of the Philippine Islands, and this act shall take effect on the date of such proclamation.

Approved, August 31, 1920.

In October, 1920, the council of state approved a draft of rules which had been prepared by the division of lands, and the division of mines of the bureau of science, governing operations on such lands. As these rules are too long to be inserted here, they will be omitted. Copies of the same will be published shortly.

LOCATION OF PROSPECTS.—The chief seeps and most promising prospects are located as follows:

1. Bondoc Peninsula (lower end), Tayabas province, southeastern Luzon.
2. The ozocerite veins near the town of Villaba and the asphaltic tuff near Balete, both on the northwestern part of Leyte Island.
3. Near Pidatan in central Mindanao.
4. The west coast of Cebu Island, from Alegria north to and perhaps beyond Toledo.
5. Natural gas from some deep wells in Tertiary shale on the eastern flank of the Cordillera and the low country to the east on Panay Island.

All the known oil seeps, petroleum residues, and natural gas emanations in the Philippines are associated with Tertiary sediments.

As modern petroleum exploration is carried on by trained geologists and paleontologists, we give, for the benefit of the reader who appreciates the importance of such information, the results of the co-operative work of many geologists, both government and private, extending over a number of years in the Philippines.

In view of a prevailing opinion that these islands are largely volcanic, it should be pointed out that there are many large areas where the only surface rocks are sediments—shales, sandstones, and limestones—and other areas where the volcanic rocks form a veneer only over the underlying Tertiary strata. It is in the shales and sandstones of these sediments that we look for petroleum. Such formations as intrusive diorite, granites, etc., we must avoid. The principal source of oil in the Philippines is the group of shales, with intercalcated limestone beds, which have been given the name of *Vigo*, from the type locality on the Vigo River in the Bondoc Peninsula.

The typical oil (Vigo) shale on Bondoc Peninsula may be described as (quoting from report of Pratt and Smith, page 331) consisting "of fine-grained shale and sandy shale interstratified in thin regular beds from 5 to 10 centimeters in thickness. Occasional beds of sandstone occur varying from 10 centimeters to 1 meter in thickness. The fine-grained shale is gray, blue, or black, and is made up almost entirely of clay. The blue or black, fine-grained shale in the Vigo formation usually emits a slight odor of light oils upon fresh fracture, and in some outcrops is highly petroliferous. The material loses this odor and assumes a light gray color after it has been exposed to the air and has become thoroughly dry." These shales contain numerous foraminifera of the genus *Globigerina*, which may be the source of the oil. Although present numerously, these organisms did not appear to comprise any large percentage of the volume of these shales. However, shales from the islands of Leyte and Mindanao contain them in very great numbers.

These Vigo shales are found to be several thousands of feet in thickness in several parts of the Islands and much thinner in others. The age of these shales is either Lower Miocene or Oligocene, and they are easily recognized by certain index fossils which have been determined by paleontologists. Some of the most characteristic are the round, globular protozoan, know as *Globigerina*; a small bivalve shell known as *Corbula socialis*; a flat-topped cone shell known as *Conus ornatissimus*; another gastropod or snail with a high spire, and very much tuberculated, known as *Cerithium jenkinsi*; and a much-coiled cast of worm borer known as *Vermetus javanus*. These fossils are well known in connection with the oil shales of Java. Specimens of these may be seen in the bureau of science collection.

The Canguinsa sandstone, a buff-colored, very porous, and somewhat tuffaceous formation above the Vigo, may prove to be the reservoir for holding the oil.

STRUCTURE.—It has long been known that an important condition for the accumulation of commercial supplies of oil is the anticline or arched flexure of the rock strata. In southern Sumatra, according to one authority, no oil has been obtained in commercial supplies except by boring on the crest of these anticlines. The double flexure where the anticline plunges at both ends, forming a dome, affords the most ideal conditions. By no means all of the productive wells in the world are located on anticlines, but in new country it is desirable to locate the most favorable structures for "wild-catting."

The Philippine Islands, as a whole, consist of masses of sediments, with other rocks of an igneous nature cutting through them, in some places lying on top; the whole series has been folded in various directions and, along with this folding, has occurred in some places very considerable faulting. It is, as a rule, a good plan to avoid these faulted areas.

SPECIAL LOCALITIES.—*Bondoc Peninsula* (from information published in a former press bulletin of the bureau of science). The seeps are in highly inclined strata which are probably in all cases part of the structure of anticlinal folds. From this association it is believed that the petroleum in this field has, in accordance with the general lay of petroleum accumulation, tended to collect in the crests of anticlines.

The petroleum occurs, associated with certain horizons, in an extensive series of beds of sandstone and shale (Vigo shale), which is similar in character to the oil-bearing rocks of productive fields, notably those of Japan. The principal seeps are found in the upper part of this series in a zone designated as the Bacau stage, which is predominantly shale but which contains subordinate beds of sandstone. In its seepage, the petroleum is associated with the shale rather than with the sandstone, and may be observed in some cases to come directly from the shale. Beneath the surface, where closed lenses of sandstone probably exist, the principal accumulation of petroleum would be expected to be found in the more open, sandy zones. At the surface the light oil appears to have escaped readily from the coarse-grained beds and to have been retained only in the fine-grained shale.

The structure of Bondoc Peninsula includes a number of anticlinal folds and the conditions along some of these anticlines are considered favorable for the accumulation and retention of the petroleum, whether it occurs in all or in any one of the horizons at which it is suspected to occur.

The following localities are considered most favorably as sites for the location of series of wells to explore the petroleum-bearing rocks of Bondoc Peninsula. They are arranged as nearly as possible in the order of their suitability from a geological standpoint, locality No. 1 being preferable to locality No. 2, etc. However, owing to conditions discussed in the full report published in the Philippine *Journal of Science*, Sec. A 8 (1913) 301, it is possible that oil may be encountered at any one of the sites, even though it be absent elsewhere. There are many places other than those listed which would be considered favorable in case exploration of any of the sites herein recommended is successful.

Locality No. 1.—The Maglihi Anticline in the southeastern part of the peninsula, near Mount Morabi.

Locality No. 2.—The Maglihi Anticline in the valley of the Bahay River.

Locality No. 3.—The Central Anticline in the vicinity of Balinsog or Bacau.

Locality No. 4.—Ayoni Anticline, about 1,500 meters inland from the mouth of the Ayoni River on the west coast.

Locality No. 5.—The Malipa Anticline near Cabongahan.

Leyte. It has been known since 1890, at least, that petroleum existed in Leyte Island, near the town of Villaba.

Rock asphalt was discovered in 1913 by a Filipino Forest Ranger and there followed a period of active claims-taking. Not until the year 1920, however, was the deposit opened up commercially.

The extreme northwestern peninsular portion of Leyte, as far south as Biliti, is worthy of careful exploration. The geological formations here are, according to Pratt, a continuation of those on Bondoc Peninsula.

In Leyte, petroleum is encountered at two places; it seeps from the upturned edges of the Vigo shale, and oozes from the base of a hill which consists of a clayey tuff-sandstone belonging to the Canguinsa. Residual bitumens occur in the Canguinsa and in the Malumbang series; one questionable outcrop of solid bitumen was observed in loose débris which appears to overlie the Vigo shale, and a heavy, black oil, or viscous bitumen, was found in sandstone near the base of the Vigo.

The bitumens in the Canguinsa are encountered in five types of deposits: (1) solid bitumens in lenses or pockets which tend to follow bedding planes, but which also cross the bedding irregularly along fractures and cavities; (2) solid bitumens in regular fissures which penetrate the clay-tuff independently of bedding planes; (3) in non-uniform mixtures of bitumen-impregnated, clay-tuff fragments and subordinate solid bitumen; (4) viscous, or semi-liquid, bitumen-cementing breccias of flintlike limestone, small domes of which protrude from the surface of the clay-tuff formation; and (5) viscous or semi-solid bitumen filling the centres of hollow, cylindrical concretions which occur in the clay tuff, with their longer axes nearly vertical and at right angles to bedding planes. The bitumen in the Malumbang series has impregnated porous limestone and sandstone, forming what is known commercially as rock asphalt.

It is this material impregnating the porous limestones of that region which the Leyte Asphalt and Mineral Company are developing. The deposit is said to be of considerable size.

Mindanao. The Pidatan district, the region at present staked for oil, lies in the drainage of the Malitubog River near the Cotabato-Lanao boundary. It is best reached by way of Cotabato and Fort Pikit, thence over a gradually ascending trail leading northward. The country is mountainous and thickly covered with tigbao and cogon grass.

The principal rocks of the region are shales and sandstones belonging in part to the Vigo group. Outcrops of Vigo shales occur near Bao and Banisilang on the Malitubog. The structure near the seep is reported to be faulted, and the beds dip in a monocline to the south. The angle becomes much steeper as the seep is approached.

There is only one seepage known at present, and this is located on the north bank of Kirusoy creek.

Cebu. Although there are several strong seeps on the west coast of Cebu, the geologic conditions are not as favorable as those on Bondoc Peninsula. At Alegria on the southwestern coast the seep is located near a fault in a very sharp fold and the topography is such that drilling operations would be expensive. Farther north, at the old Smith Bell well near Toledo, the rocks are found in a monoclinal attitude in which there are minor folds. Detailed work in that region has revealed some unfavorable structural features. However, between these two localities, or farther to the north of Toledo, favorable structures might be located.

Panay. On Panay the shale beds yielding natural gas are generally monoclinal; that is, dipping in one direction to the east, away from the main cordillera of the island. From work already done in that region there is at least one well-defined anticline, known as the Maasin Anticline, which might be a favorable location for a test well. However, it should be stated that some comparatively deep artesian wells in that region, which have reached a depth of 537 meters, have shown so far only small amounts of natural gas and salt water.

Chemical and Physical Properties of Philippine Petroleum and Natural Bitumens.—Philippine petroleum has a paraffin base and is usually reddish to violet in color. It is quite dear, and closely resembles oil from Burma and Sumatra. Table 2 gives a fairly complete analysis made by Richmond, and others, former chemists of the bureau of science. Table 3 contains an analysis of the petroleum residues from Leyte Island. The paraffin content of Philippine petroleum is very high; a beer bottle full of oil which one of the geologists collected in 1908 from the Toledo well, and put, imperfectly sealed, into one of his saddle

Table 2.—Physical and Chemical Properties of Philippine Petroleum*

Description of Petroleum	Crude Oil.		Distillation Products.						Residue above 400° C.	Remarks.
	Color Transmitted light.	Specific Gravity	Gasoline, to 150° C.		Kerosene, 150° to 300° C.		Heavy Oils 300° to 400° C.			
			Volume	Specific Gravity	Volume	Specific Gravity	Volume	Specific Gravity		
Tayabas Bahsy well I., depth 40 m. Sampled by division of mines 24 hr. after well had been drained	Brown to wine red	0.8325	39.0	0.770	44.5	0.850	16.5			Flash point 0° C. (32° F.). sulphur absent; initial boiling point, 91° C., paraffin, 8.1 per cent.; specific gravity at at 15° C.
Cebu, P. I.:										
Well at Toledo, Cebu	Dk. brown	0.885	6.2	0.762	42.32	0.832	38.3	0.901	13.17	Residue above 375° C.: specific gravity at 15° C.
Oil seep at Alegria, Cebu	Dk. brown		17.5		30.5		35.0			Residue contained foreign sediment.
Leyte, P. I.		0.926								Flash point 74° C. (166° F.).

*Analyses by Richmond, and other chemists of the Philippine Bureau of Science.

bags, was found, on unpacking three days later, to contain no oil; but it was half full of solid paraffin.

PIDATAN, MINDANAO

Specific gravity at 15.6°C	0.9297
Distillation :	
Light oils (below 150°C.)	None
Burning oils (150°-300°C.)	45 per cent. by volume
Heavy oils (300°-400°C.)	49.5 per cent. by volume
Residue	5.5 per cent.
Sediment	Large amount
Water	Trace
Base	Paraffin
Main calories or gross heating value ...	12,495
Available heating value	11,189
Sulphur	1.56 per cent.

TABLE 3.—PHYSICAL PROPERTIES OF NATURAL BITUMENS FROM VILLABA, LEYTE.

Property	Outcrop A and B	Property	Outcrop A and B
Specific gravity ...	1.05	Luster ...	Brilliant
Hardness... ...	2.00	Structure ...	Columnar
Color	Jet black	Fracture ...	Conchoidal
Streak	Black	Flows ...	Intumesces, softens and flows imperfectly at 150° C.

Conclusions

1. That there is a very high grade of petroleum in the Philippine rocks is proved beyond question.

2. The source of this oil appears to be in the Vigo shales which contain microscopic organisms of a very simple structure, known as Foraminifera. No diatoms, such as are associated with the Californian deposits, have so far been seen in the Philippine shales.

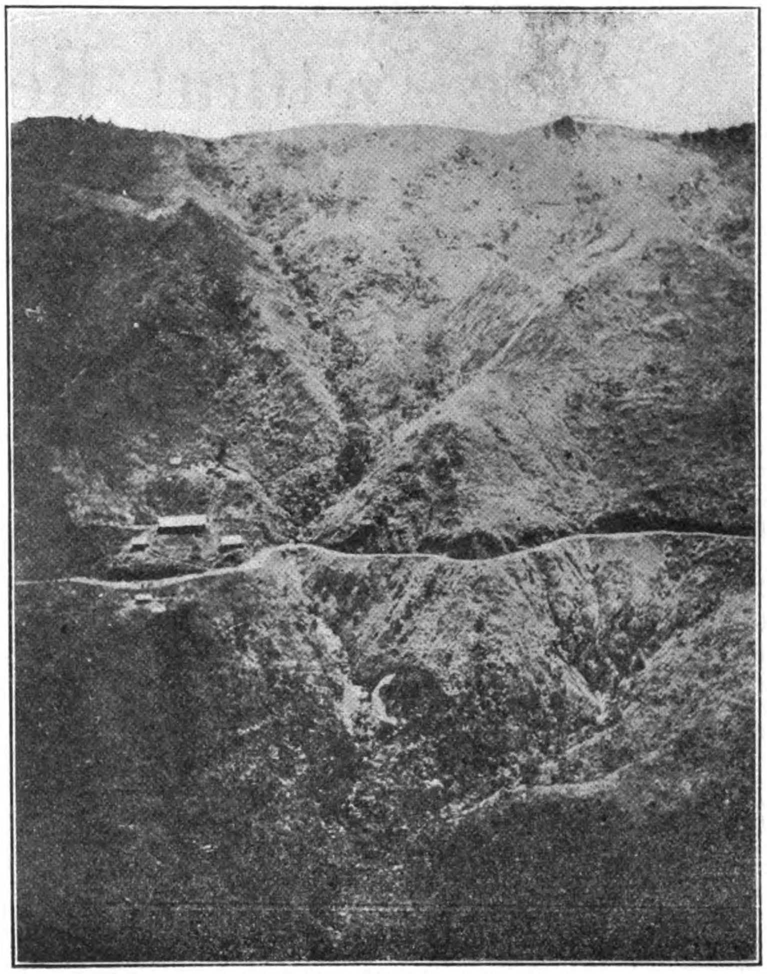
3. In several parts of the Islands, notably the Bondoc Peninsula, the structure appears to be quite suitable for the accumulation of commercial supplies of oil.

4. The kinds of rocks and structure of these, as well as the oil contained in them, are very similar to those of Sumatra, Burma, Formosa and Japan.

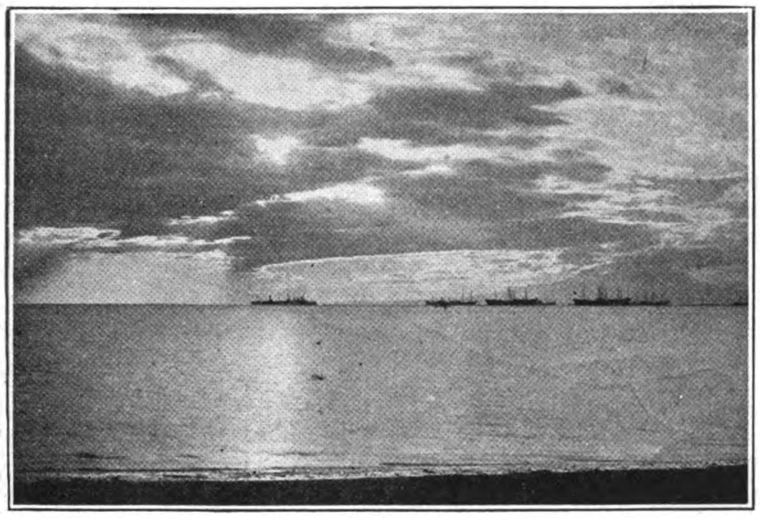
5. The quantity of petroleum is unproved and can be proved in only one way; namely, by drilling.

6. In view of the world-wide shortage of petroleum and its products, competent and financially able concerns would be justified in doing "wild-cat" work in the Philippines. A word of caution to those who lack experience in the business or who are not amply supplied with large funds should be given at this time. The oil game is perhaps the most expensive that man plays and, though great fortunes have been made out of oil, on the other hand, thousands of people with modest incomes have been ruined in the same game.

The division of mines of the bureau of science has specimens of Philippine oils and of all the kinds of formations, collections of fossils occurring in the oil fields, and the latest literature dealing with the prospecting and the development of oil fields, all of which are gladly placed at the disposal of the public.



Mountain Road in Albay Province



Sunset in the Luneta

Real Enterprise in Engineering

With the rapid strides made in the engineering world there stands well to the fore the activities of the firm of Dorman, Long & Co. which, since its foundation in 1876 by Mr. A. J. Dorman and Mr. A. de Lande Long, has made continual progress and large extensions. Early manufacturers of angles, bars and iron girders (this latter article being imported prior to manufacture by the firm in England), they have rapidly developed to the extent that the following table summarizing their properties and output shows:—

8 Ironstone Mines	producing annually	1,650,000	tons of ironstone
1 Quarry	„ „	300,000	„ limestone
7 Collieries	„ „	1,835,000	„ coal
1000 Coke Ovens	„ „	865,000	„ coke
		62,500	„ tar
		12,500	„ sulphate of ammonia
		2,000,000	gallons crude benzol
32 Blast Furnaces	„ „	1,078,000	tons of pig iron
32 Steel Furnaces	„ „	1,000,000	„ ingots
17 Rolling Mills	„ „	750,000	„ plates

To cope with their large extensions the company has increased its capital from time to time until it now stands at £7,500,000.

The Natural Resources of Davao*

Opportunities for Development

By P. J. Wes'er, Agricultural Advisor

THE province of Davao is located between 125° and 126° 40′ east longitude, and between 5° 20′ and 8° north latitude, in the southeast corner of the Island of Mindanao. It is bounded on the north by Agusan province, on the east by the Pacific Ocean, on the south by the Celebes Sea and on the west by Cotabato and Bukidnon, and has a coast line of more than 600 kilometers. With an area of 7,486 square miles Davao nearly approximates in size the state of New Jersey, which has an area of 7,815 square miles, and it has a population of about 101,000 inhabitants according to the census of 1918.

According to the most recent surveys and estimates of the bureau of forestry, Manila, 90.2 per cent., or 1,749,420 hectares of the area of Davao is still commercial forest, a greater area of woodland than that in any other province in the Philippines, Cotabato excepted. The land in cultivation includes but 30,730 hectares or 1.6 per cent. of the total area. The open land and cogonales is probably not less than 50,000 hectares. These figures may require some readjustment, since there is an unexplored area of 6.1 per cent., or 117,564 hectares. There are quite extensive mangrove swamps at the head of the gulf.

In addition to the mainland Davao includes four fairly large islands, Samal and Talikud, near the head of the Davao Gulf, Bulat and Sarangani off the southernmost point of the Island of Mindanao, and several smaller ones scattered along the coast here and there.

Geographically Davao Gulf is the central feature of Davao province and practically all plantations in the province extend inland from its shores. Few people realize that here in the southeast of the Philippine Archipelago there is a bay more than three times as large as the Bay of Manila.

The province itself is constituted of the eastern slope of the mountain chain that, roughly speaking, extends from north to south, west of Davao Gulf, the Agusan Valley south of the eight parallel, and the large peninsula to the southeast, terminating at Cape San Agustin.

The topography of Davao is varied. There are large level or undulating plains, there are gently rising mountain slopes and rugged, precipitous mountains. The country is everywhere well watered by numerous streams and rivers, which, thanks to an evenly distributed rainfall, rarely or never run dry.

In a general way, the great bodies of agricultural land in Davao might be considered in two large regions. (1) The country in northern Davao drained by the Aguasn River and its tributaries. This spacious, fertile country belongs topograpically to the Agusan Valley and it is one of the finest bodies of virgin agricultural land in Mindanao. The present great drawback to this district is the absence of transportation facilities ; and as yet the entire tract is lying idle, barring a few isolated patches of semi-cultivated land occupied by the native inhabitants. (2) The water-shed of the Saug, Libuganon, Tagum and Hijo Rivers at the head of Davao Gulf and the country to the west and south thereof to Mount Apo and Malalag Bay west of the gulf, and east of the gulf to Mapanga Bay.

There are other valleys of greater or less dimensions of equally fertile land in the remainder of Davao, for instance, the country around Lais and Malita, at Kuabo, and north of Mati, but these areas are not comparable in size with those of the two large regions first mentioned. In the other coast districts, even where the mountains approach the coast, when the streams come within sight of the sea, as a rule the surrounding country spreads out in alluvial valleys of great fertility, sometimes small, not more than a few hundred hectares, to larger plains, sometimes exceeding a thousand hectares in area. Several of the Davao plantations are situated in such valleys. Though most of the better agricultural land in Davao is below this elevation, the Guianga plain to the northwest of the town of Davao ascends from 300 to over 600 meters altitude.

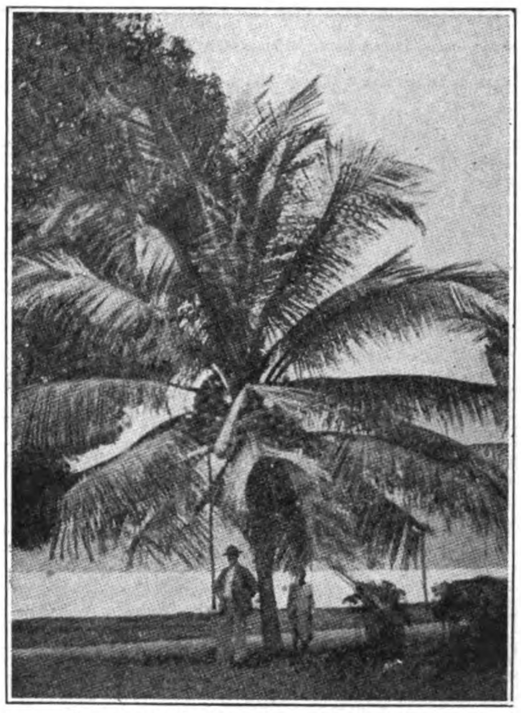
The southern part of Davao west of the gulf, from Sarangani Channel to Malalag Bay, is mountainous and forested from the

Hydro-electric and Ice Plant of the Ohta Development Company, Mintal, Davao

Hospital for Plantation Laborers operated by the Ohta Development Company, Mintal, Davao

* The writer wishes to acknowledge his indebtedness to Col. Ole Waloe, Philippine constabulary, for access to the constabulary monograph of Davao, and to Mr. Carl M. Moore, superintendent of schools in Mindanao, for access to a report on agriculture in Davao by Mr. W. F. L. Asimont. The map of Davao has been traced from a map of Mindanao furnished by Mr. H. E. Neibert, supervising surveyor, bureau of lands. The map of the Malalag Bay has been traced from a map furnished by the director of the U. S. coast and geodetic survey, Manila.

Cotabato border to the coast. It is a rugged country, rich in timber but relatively unimportant from an agricultural point of view. Still, notable plantations are located here, such as those of the Culaman Plantation Company at Malita, one of the largest and most successful estates in Davao, and the Lais Development Company in Lais; and it is about Malita and Lais that the cultivation of rubber (para and castilloa) and robusta coffee is concentrated in Davao.



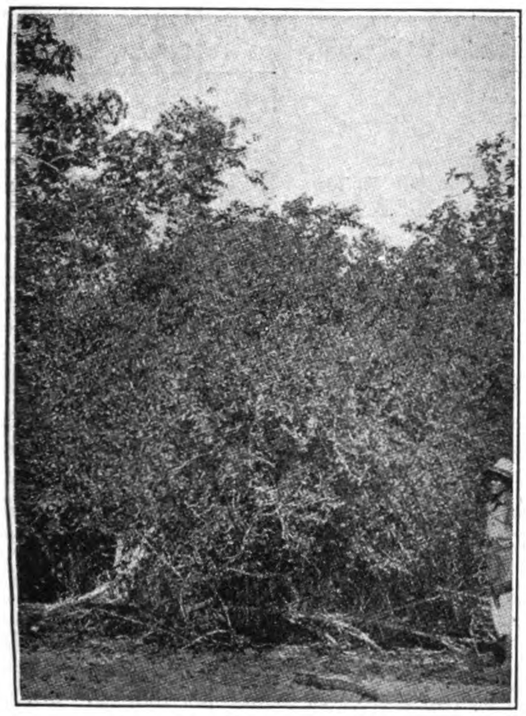
Cocoa-nut in Bearing. Mati, Davao

From Malalag Bay and northward the country assumes a different aspect. The mountain ranges recede from the seashore and give room for broad, undulating plains, gradually rising as one travels westward, partly in virgin forest, in part cleared and overgrown with cogon, *imperata cylindrica*, a tall, perennial grass. This is, in fact, a section of one of the large agricultural regions of Davao.

The narrow peninsula east of the gulf, from Kuabo southward, is a rough, mountainous land covered with virgin forests. The agricultural areas are small and located on the west coast of the peninsula.

The land from Mati to Manay for some distance inland is the principal cattle district in Davao.

In the river valleys the soil is, as a rule, a friable, rich alluvium, free from boulders and stones and frequently of great depth. Lands with good agricultural soil three to four meters deep are by no means uncommon. Now and then a sandy loam is encountered. Heavy clay soils are the exception. On the higher slopes of the mountain range facing Cotabato much of the soil is of volcanic origin and is exceedingly fertile.



The Buol, *Ximenia americana*. Malalag, Davao

The long coast line is indented by several large bays, such as Mapanga, Kuabo, Puhada, Mayo, Karaga, and Kateel.

Good anchorage and harbors for motor boats are located at the following points: Astorga, a few kilometers north of Santa Cruz; Butulan, north of the Sarangani Channel; Kalian just north of Kalian Point; Kuabo, on the bay of the same name; Mapanga on the bay of the same name; Patulangan, on the east coast of Davao Gulf just north of Santa Cruz; Tagabuli, a few kilometers south of Santa Cruz, at the mouth of the river of the same name; and Tubalan, on the east coast of Davao Gulf north of Malita.

Sago is common and grows luxuriantly in many parts of the Province, Sigaboy, Davao

Patoko and Tumanao, on the west coast of Sarangani Island afford good anchorage for steamers and motorboats. Mati, at the head of Puhada Bay has a good harbor for ocean-going steamers. This is also true of Monserrat, located some distance south of Kuabo Bay on the west coast of Davao Gulf.

The best harbor in the province is Malalag Bay, inside Kolapsin Point on the eastern shore of Davao Gulf.

Davao has a large number of streams and rivers of which the following are the largest and the most important:

The *Agusan* River, which originates west of Karaga and flows first westward and then in a northerly direction until it enters Agusan at Patrocinio and empties into Butuan Bay, on the north coast of Mindanao (See *Agusan: Its Natural Resources and Opportunities for Development*, in the previous issue of *Philippine Agricultural Review*. The Agusan is navigable for motor boats to Veruela in Agusan province and thence by baroto to Compostela, Davao.

The *Kateel*, emptying at Kateel, has a considerable volume of water but the current is too rapid to permit navigation.

Kandiis, *Garcinia* sp., a native unidentified fruit tree related to the mangosteen. Sigaboy, Davao

The *Davao* River, emptying at Davao, the provincial capital, is navigable for small motor boats for about ten miles inland.

The *Lasang* River is navigable for barotos for about four miles.

The *Libuganon* rises in the mountains in the northwestern corner of Davao and joins the Sang River at Pagsabangan. Thence to the sea it is known as Tagum River which is said to be navigable for small boats for about 25 miles inland.

The *Saug* River, already mentioned,

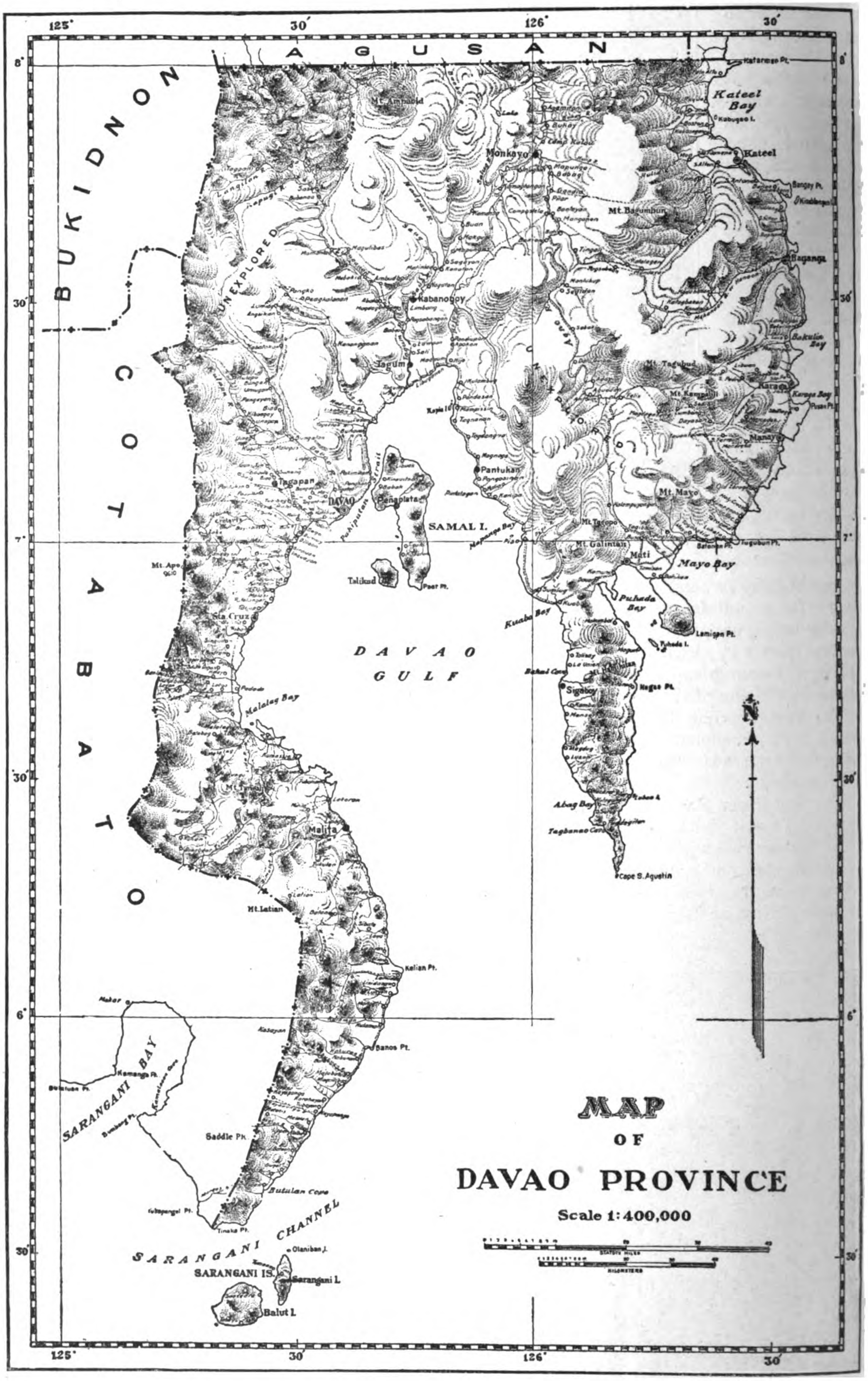
is navigable for barotos to Macgum.

The *Tagum* River, formed by the confluence of Saug and Libuganon Rivers at Pagsabangan is navigable to this point by motor boats drawing 5 feet of water. On a much smaller scale the Tagum River and its valley is very similiar to the wooded banks of the Agusan on the north coast of Mindanao.

Padada, *Hijo*, *Sumlug*, *Bitangan*, *Karaga* and *Honoon*, are other somewhat less important rivers with a smaller volume of water, in addition to which there are innumerable small short streams and water courses that wind their way from the mountains to the sea all along the coast.

With the exception of Tagum the rivers in Davao are of little value for transportation purposes. On the other hand the numerous falls and rapids afford rich opportunities for the construction of power plants for plantations, for industrial and lighting purposes and for transportation.

The highest mountain is Apo, 2,883 meters high, located near the Cotabato boundary, southwest of Davao; Hamihitan on the narrow peninsula south of Puhada Bay ascends to an elevation of 1,607 meters, and Latian southwest of Lais is 1,586 meters high. Several other mountains reach an altitude of 600 to exceeding 1,000 meters.



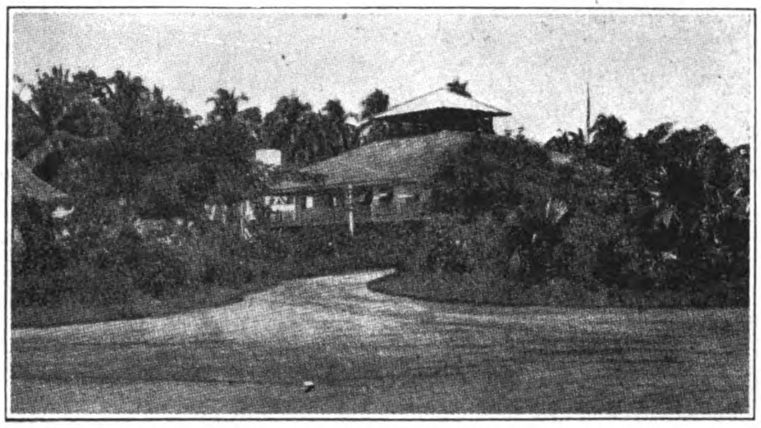
Climate

In a territory so large and having the topographical formation characteristic of Davao naturally there is considerable variation in the precipitation in the various districts, but in the main Davao has a very evenly distributed and ample rainfall. In fact, the capital of the province has a more equal distribution of rainfall than any other point in the Philippines where observations are made at present and it is fairly typical of the province as a whole.

The temperature varies, of course, with the elevation. On the lowlands it is rather warm and sultry during the day but the nights are always cool and pleasant. Further inland on the mountain slopes above 300 meters the heat is never oppressive.

Population

The population of Davao is about 101,000, divided into Filipinos (the majority of whom belong to tribes peculiar to Mindanao, including the Bagobos, Bilans, Mandayans, Tagacaolos, Atas, Culamans and Moros), about 10,000 Japanese and some



The Provincial Government Building, Davao

300 Chinese. One hundred Americans, perhaps, are living in the province, mostly planters.

Of the native tribes the Bagobos occupy the east coast of Davao Gulf from Digos to Talomo, including the mountain slopes to Cotabato and the Guianga plain. The Tagacaolos inhabit the country from Digos to Lais, and furnish most of the native plantation labor in the province. The Culamans are scattered from Padada to Sarangani on the east coast and from Kuabo to Cape San Agustin on the west coast of Davao Gulf. The Bilans occupy Sarangani Island and the country immediately to the north thereof, and there are some also here and there in the mountains north of Cape San Agustin. The Mandayans occupy the mountain range from Cape San Agustin to Agusan and the valleys of Agusan, Hijo and Tagum Rivers, north of the gulf. The Atas live in the interior between Davao and Libuganon Rivers. Remnants of the invading Moros are settled on Samal and Sarangani Islands, at the mouths of the Tagum, Hijo, Lasang and Sumlug Rivers, and in some villages on the Pacific coast between Manay and Mati.

The Japanese are occupied in growing abacá and cocoa-nuts both as owners of and laborers on plantations. The Chinese are traders.

On the face of it, from the above statement, it would appear that labor is fairly plentiful in Davao, whereas the opposite is true. The natives are either caring for their own small farms or they are occupied in other pursuits, and new estates that are opened in the future must needs import labor from the Visayas or Luzon.

Historical Review

Davao is the "youngest" province in the Philippines. Its history is recent and scant and is rather in the making and in the future. But little is known of Davao prior to about 1823, until which year the Bagobos inhabited the coasts. Moro pirates then arrived and drove the Bagobos to the hills, who sent emissaries overland to the Spanish military post at Cagayan, Misamis, for aid against the Moros. As a result the Spaniards dispatched an expedition by sea to Davao, which, aided by the native inhabitants, drove out the Moros and hoisted the Spanish flag. Davao was occupied by the American army in 1900. The military government continued in force until 1914, when civil government was established and Davao was made a province in the department of Mindanao and Sulu.

Agricultural Industries

Reliable export figures for Davao are not available but in part may be surmised from the following table showing the areas planted to agricultural crops, furnished by Mr. Antonio Peña, chief, division of statistics of this bureau. Of the below named products only abacá and copra are exported.

AGRICULTURAL CROPS IN DAVAO, 1918.

Crops	Area *Hectares*	Quantity	Value *Pesos*
Abacá	17,983	7,085	4,550,728
Cocoa-nuts	[b]1,014,742	[a]542	[d]96,839
Rice	7,470	[c]76,891	361,108
Corn	468	[c]3,705	14,879
Tobacco...	41	[a]19	7,586
Coffee (est)	—	9	4,800

[a] Metric tons. [b] Trees. [c] Hectoliters. [d] Total value of all products.

According to these figures, if we reduce the number of cocoa-nut trees to area, calculating 204 to the hectare, or 7 meters apart, there are 45,200 hectares planted to cocoa-nut palms in Davao, one-third of which are estimated to be in bearing. The cocoa-nut ranks first if area is considered ; if crop values are the index abacá is by far the leading crop. In fact, notwithstanding its recent development Davao already ranks sixth among all the provinces in the archipelago in abacá production, and in quality Davao abacá outranks the product of all the major abacá districts in the Philippines. By far most of the abacá is produced on plantations located around the gulf. In value of the product rice ranks second among the agricultural crops of Davao, but a large quantity of rice is still annually imported. Kateel is the most prominent rice district in the province.

The production of other crops is insignificant.

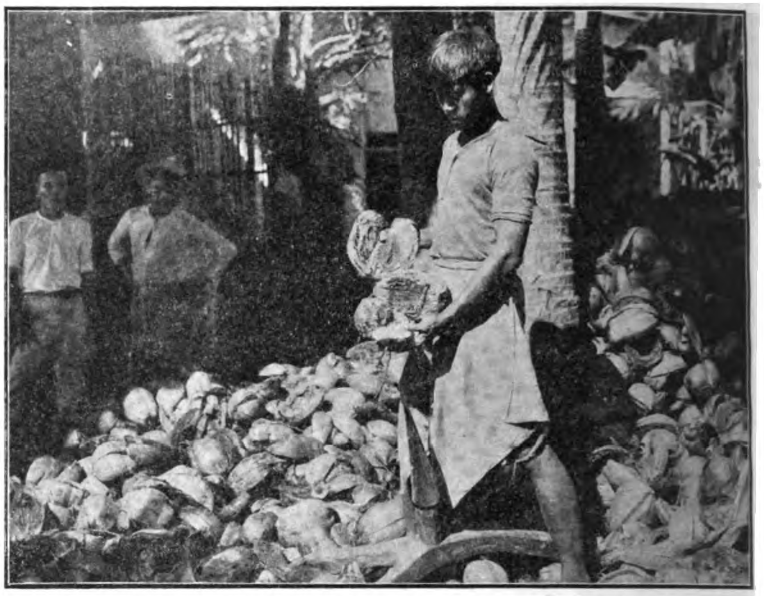
The vegetables in Davao do not differ very materially from those grown in other parts of the Philippines except that fewer kinds and smaller quantities are grown.

Sago palms, *Metroxylon sagu* Rottb., are common along the rivers and furnish a wholesome food.

It is but natural that abacá and cocoa-nuts should claim the attention above all other crops in Davao, and the province is unquestionably destined to become a country of large plantation ventures. Indeed, such large fortunes (for the Philippines) have been made in land speculation and abacá within such short a time that except cocoa-nuts, cattle and to a limited extent rubber, other crops and business ventures seem to have been lost sight of.

Dragging logs out of the Philippine forests by man-power. These methods are rapidly yielding to modern machinery

Davao Copra Industry, Sun-drying Copra



Stripping Husks from Cocoa-nuts

Plantations

The rapid progress of the agricultural development of Davao may be surmised from the fact that whereas in 1917 69 corporations were engaged in agriculture on a fairly large scale, this number increased to 127 in 1918. Of these 82 were organized by Japanese, 20 by Americans and 19 by Filipinos.

Among these plantations those operated by the Ohta Development Company in Talomo and Mintal are the largest and are exceptionally well-organized and managed. In Mintal this company has installed an irrigation system including three miles of main canals and 70 miles of laterals. Talomo is the centre of administration of this company where it has a private wharf and large bodegas. A large, airy modern hospital of light material has been erected in Mintal and all buildings are lighted with electricity from a small hydro-electric plant at Mintal where ice is also manufactured for the needs of the plantations. The plantations, which consist of abacá and cocoa-nuts, are well managed and in excellent condition. Altogether, considering area, its general appointment and management and the excellent condition of the plantations, this enterprise reflects the greatest credit on its organizers and administrators and is well worth visiting by prospective planters who wish to see a model abacá and cocoa-nut plantation managed in line with the most advanced ideas in tropical agriculture.

The Culaman Plantation Company at Malita also has a large plantation of abacá and cocoa-nuts in excellent condition.

Among the many other plantations that have come into existence and are well established the following are especially worthy of notice: The Piso Plantation Company at Piso on the west coast of the gulf. The Madaum Plantation Company at Madaum, at the head of the gulf. The Moro Improvement and Trading Company at Tagnanan, the Gulf Plantation Company at Pantukan, and the Southern Cross Plantation Company at Pangasinan; all of which are located on the west coast of the gulf above Mapanga Bay. The Mindanao Plantation Company at Digos; the Padada Plantation Company at Padada; the Cumassie Plantation at Cumassie, the Basiaon Plantation Company at Basiaon Bay; the Lacaron Plantation Company at Lacaron and the Lais Development Company, Lais, are all located on the east coast of the gulf south of the town of Davao. These are but a few of the more prominent agricultural ventures in the province.

Davao's Fine Hemp. Sorting Abaca and Tying in Hands of Proper Size

Nearly all the plantations in Davao are devoted to abacá or this is the principal crop, though cocoa-nuts are now being planted to an increasingly greater extent, and the indications are that very considerable areas now in abacá will be given over to cocoa-nuts. The violent fluctuations in the market price of abacà fiber coupled with the scarcity of labor is largely responsible for this movement.

At Lais and Malita some castilloa rubber has been planted which is here considered quite promising, largely because the gathering of rubber is simple and can be performed by untrained labor. A small number of para rubber trees have also been set out. Certainly the soil and climate appear to be very favorable foı the growth of hevea. Robusta coffee has been planted at Lais and found very successful but there are no large plantations in the province. Cattle are raised very successfully in connection with some plantations devoted to cocoa-nuts, especially near Mati.

Small areas have also been planted to lumbang or biao, *aleuirtes moluccana*, for nut production by some planters, but it is very doubtful whether this crop will prove as profitable as the cocoa-nuts, abacá, rubber and coffee, to which the province is well adapted.

Resources and Products other than Agricultural

The vast forests of Davao contain much the same timber trees that are found in the forests in other parts of the Philippines.

As yet there are no saw mills to utilize the forest resources of the province.

Lumbang nuts are collected and marketed to a considerable extent. Almaciga and rattans are brought from the forest in small quantities. As yet nothing has been done to export tan-bark from the mangrove swamps that are situated on the gulf.

The waters around Davao are rich in fish but the fishing industry is poorly developed.

Sulphur deposits are reliably reported to exist on Mount Apo, but no surveys have been made to determine their extent. There are hot sulphur springs at Point Baños about midway between Malita and Sarangani Channel.

Trade and Communications

When the recent economic development of Davao is considered, coupled with the presence of an exceptionally long coastline, the reasons for the almost total lack of roads is easily perceived. The only first-class road in the province has been constructed from the town of Davao to its shipping point and dock, Santa Ana, a few kilometers away, which road now is being extended to Talomo. But the absence of land transportation is not such a hardship to the inhabitants as one might be lead to believe, considering that nearly all plantations are located on the gulf and have water transportation.

Two wireless stations, one in Davao, the capital, and another in Kuabo, together with telephone lines that extend to all the more important municipalities even on the Pacific coast as far as Kateel, serve as means of communications within the province, and with the outside world.

The inter-island transportation facilities are confined to the steamers *Raritan*, *Fernandez Hermanos*, *Albay*, *Neil*, *MacLeod*, *Yazoo*, *Mindanao* and *Tablas*, of which all but the last make regular trips to Manila. These steamers not only touch at Davao and Mati, the two principal ports, but depending upon the amount of cargo to or from each place, they call at several of the plantations or municipalities in the gulf as well as on the Pacific coast as far as Kateel. These steamers also call at Zamboanga, Dumaguete and Cebu on their way to and from Manila.

Future Development

The two great future industries of Davao are lumbering and agriculture.

As in Agusan and Cotabato, aside from the timber for lumbering great quantities of almaciga and rattan can be gathered in the forest while tanning extracts can be obtained from the mangrove swamps on the gulf.

The phenomenally rapid development of agricultural lands in Davao is a prophecy of the future, and this may be expected to proceed at a greatly accelerated pace. Here a word as to the development of the past may not be out of place. The progress of Davao during the last five years undeniably has been more rapid than that of any other province in the Philippines. Many (for the Philippines) big corporations have been organized and have set out plantations of abacá and cocoa-nuts. There has been a great stampede for plantation sites, and an impression has recently gained headway that the public land in Davao was fast becoming exhausted. This is not true. How erroneous this belief is may be seen by a glance at the figures on the first page of the within article, where it will be noted that less than 2 per cent. of the lands of the province are claimed for agricultural crops. It is a fact, however, that the agricultural lands near the coast are rapidly being occupied and since there are practically no roads into the interior of the province, planters away from the coast naturally are at a great disadvantage. In fact large areas of the most fertile lands in the province away from the coast are practically inaccessible to planters who would unquestionably open up the lands if the communications with the coast was established. This brings to the fore the future transportation problem of Davao.

The long coastline will permit extensive employment of water transportation on the gulf by small craft, for which there is good anchorage at many points. Good roads from these minor "ports of call" into the interior would do much to bring several of the inland districts within the region where agricultural development is feasible, but for the opening up of the great agricultural district in northern Davao and the establishment of communications with the neighboring provinces, railroads are imperative. With a view of serving the agricultural interests of Davao a harbor more centrally located would have been desirable, but all other advantages are so one-sidedly possessed by Malalag Bay in contrast to other points that one may expect it to become the principal shipping port in Davao.

A railway, terminating at Malalag (one branch turning westward and crossing the range of mountains would enter the Cotabato Valley), should run northward through the rich valleys of Padada, Digos and Santa Cruz in succession, then penetrate the Guianga Plain to turn in a northeasterly direction until it entered the Agusan Valley territory to connect with the railroad from Nasipit. For an outlet to the sea in the northern part of the Davao Gulf, Tagum would probably be the most desirable point, though low and swampy. A third roadstead at Mati on the Pacific coast will probably be established eventually for a branch line penetrating the interior of the peninsula to the north of this town.

The quality of the soil and the rainfall indicate that large areas of land in Davao are well adapted to para rubber. It is true that the earliest attempts to grow para rubber in Davao failed, but this would appear to have been due to faulty seeds and plants, and to inexperience in handling rubber, for later plantings have done well. Also, one may expect para rubber in time to become one of the principal products of Davao. Notwithstanding the progress made by castilloa in Davao, in the light of the experience with this rubber in all other regions where it has been tried, it cannot be recommended as a plantation crop where para rubber will succeed.

While Arabian coffee is not recommendable anywhere in Davao, there is every reason to believe that the new blight resistant coffees would prove highly successful. More particularly on the Guianga plain tea culture on a large scale would appear feasible.

On some of the lighter soils tobacco of good quality might be produced. Other annual crops adapted to this regions are jute and roselle for fiber. Small quantities of anabo fiber are already produced from a native plant, *abroma augusta*, and it is by no means impossible that this might become an important agricultural crop, for the fiber is of good quality and the plant is of rapid growth and easily grown. Cassava starch in large quantities might be produced. The production of the annual crops is largely a question of securing enough labor to handle them.

Native Vegetation on the Shore of Malalag Bay, Davao

The food plants grown in other parts of the Philippines succeed well in Davao and with the proper organization of its agricultural industries the province could be self-supporting so far as foodstuffs are concerned.

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, MAY, 1921.

Lest we Forget!

"It wants more courage to make peace than to carry on a war. *People who demand war and criticize peace are generally weak people who have never fought.*"

ELIHU ROOT, the foremost American statesman of our time.

Balaam's Pets

"GOOD Americans have plenty of cause to regret any asininity expressed in the form of unnecessary anti-Japanese sentiment. It usually comes from those who, lost in a dense jungle of prejudice, throw back their heads to the skies and give forth ill-considered war whoops.

We have no intention of devoting these pages to an attempt to make those who happen to dislike the Japanese find a sudden affection for them. To be rabid as a hater of Japan is to suffer from a disease not easily cured. It is a disease which will keep out of the intelligence of its victim any plain realization of facts, such as the fact that Japan is the only self-governing country within a three-thousand-mile radius of her own boundaries, and is menaced by the disruption around her, upon the one hand, and by the possibility of Occidental occupation of naval and military strongholds, on the other hand.

We refuse to doctor the disease and address ourselves only to Americans who are willing to face facts and to see that, whether we wish it or not, destiny and geography have made Japan a dominant influence in Asia, just as Great Britain is to continue a dominant influence in Europe, and we a dominant influence in the Americas. We address ourselves to those who are willing to realize that there are, roughly, two groups in the internal politics of Japan. *One of these groups is commercially peaceable, desires no conquest of territory, and seeks to co-operate with America.* The other group is bureaucratic, military, and seeks to retain its political power by appealing to its constituency on the basis of jingo patriotism. *Americans who are willing to see these two facts will have to conclude that it is quite worth our while to remain friendly with Japan, and to co-operate with the kind of Japanese who sympathize with our ideals and earn our sympathy with their ideals.*"

No gentle reader, this was not written by the editor of THE FAR EASTERN REVIEW. We culled it from a mass of American editorials expressing very much the same views, and reprint it as one of the most forceful expressions of opinion from the editor of *Collier's Weekly* noted for his Americanism and good, common, horse-sense. His diagnosis is right. To be a rabid hater of Japan is to suffer from a disease not easily cured, and while good Americans at home have plenty of cause to regret any asininity expressed in the form of unnecessary anti-Japanese sentiment, here in China this is reversed, and the "good" Americans who have arrogated to themselves a monopoly of patriotism, insist that the elongated and distinctive feature of Balaam's pet is a characteristic of the unpatriotic American who refuses to fall in behind the procession and yap for war with Japan.

* * *

The Significance of Copper Coinage

IT is not difficult to picture the chagrin in which a farmer has parted with more coppers than he had expected when he set out to purchase that ten yards of grey shirting made possible by a previous disposal of his ten catties of beans. To his surprise his sale of beans has netted him an extra ten coppers but now these ten coppers and more besides have been necessary in order to secure the cloth. His annoyance comes not from the reason. Psychologically imperfect, the register in his mind of a seeming injustice has aroused his indignation. There has been no attempt to understand the why and wherefore, and he returns to his village from the city market place firm in his mind that a wrong has been imposed. Mrs. Farmer and the Farmer children will be the sufferers when next a purchase is necessary. On his already crowded field more beans will have to be grown. On his and his family's already underclad backs, less clothes will have to be worn. There had been no such infliction in his grandfather's day. Peace and plenty made the days in which he had lived days of contentment. And now. . .

Adjustment always follows abuse, whether in slow order or swift. Recognition that China's copper coinage has become a victim to the malpractices of usurers is slowly opening up an avenue which will eventually take in these pirates for a gauntlet running. It is inevitable. What must happen in the meantime are factors in a situation which demands an aggressive handling of the matter. Depreciation in the value of copper coins must reflect seriously upon the buying power of the Chinese merchant, for copper is the trade medium of the masses, and their ability to buy marks the buying capacity of the city middleman. Thus will be added, or is already added, one more instrument of trade incumbrance to the many already existent. Hard indeed is the lot of the foreign trader in these parts. If he and the many Chinese who are to benefit by a legitimate and less difficult system of trade routine wish to relieve themselves of the protruding nail within their shoe they must take an active part in hammering it down. We commend to their attention an article from the pen of Mr. Donald McColl, of the Shanghai Tramways, which is printed elsewhere in this number. The question is dealt with in some detail and will no doubt assist in any movement which may be inaugurated to eliminate the evil.

* * *

Europe Supplying Own Railway Needs

THE European manufacturers of railway materials are now able to supply their own requirements and are fast getting to a point where they will not be dependent upon American credit. So says Mr. W. H. Woodin, president of the American Car & Foundry Company, in the *Wall Street Journal.*

"It is pitiable almost to see ourselves in the position to lend money, and to hear some bankers decry it as a fault in other nations that they want to borrow. Instead of wringing their hands when they hear that China wants money, or that Chili wants money, they ought to be overjoyed. There are billions of dollars in the United States that should go abroad in the next few years. The position that England occupies in world finance was brought about by her ability to lend money, and we ought to follow the British example if we want to obtain the same measure of success. *Lending money* is not a matter of charity, but a matter of good business.*

"We must abandon any idea of doing an export business in Europe on anything but the most inconsiderable scale," he said. "Take American Car & Foundry Co. as an example. Europe can

* The italics are ours.—Ed.

build her own locomotives, freight and passenger cars. Immediately after the armistice it looked as if there might be a demand for American equipment for Europe's railroads, because it appeared that Europe could not produce them and that she might need the credit we could extend. Now it is certain that Europe can produce her equipment and she is fast getting to a point where she will not be dependent on American credit.

"Russia is the only exception, but it seems certain that Russia offers no field for the export of American car equipment because by the time Russia is re-established the Germans will be in position to beat us in the Russian market.

"The main field of activity for the American car and foundry company for future as in the past, will be the domestic field, and there is plenty of room for expansion in that direction. That does not mean that we will not proceed with normal development of certain foreign business, particularly in Mexico, Central and South America and China. These latter countries furnish a big field and they will not be neglected."

* * *

JUST PUTTERING

"The Peace Negotiations"

> **"I feel as if we, the commissioners, were like a lot of skilled workmen who are ordered to build a house. We have the materials and tools but there are n› plans and specifications and no master workman in charge of the construction. We putter around in an aimless sort of way and get nowhere."**

THE veil of secrecy shrouding the peace negotiations has been lifted, in part, by the publication of the personal narrative of Mr. Robert Lansing. The chapters of the book of especial interest to our readers are those dealing with the "Lack of an American Programme" and the " Shantung Settlement." THE FAR EASTERN REVIEW was one of the very few publications to invite attention to the absence of any program on the part of the American delegation. Our delegation went to Paris like a lot of school children chaperoned by the head professor. They had no program, no pilot, only the general principles of the president as loosely outlined in the Fourteen Points and his "subsequent addresses" to serve as a guide. The commissioners or the experts were rarely consulted. If an expert entertained views harmonizing with the president's, he became superfluous; if conflicting, he was no expert. He was a nuisance. Lawyers were held in special abhorrence. The president made this very clear during the conference of January 10, 1919, when he bluntly told Mr. Lansing that he did not intend to have lawyers drafting the treaty of peace. Soldiers, men of action, were the president's pet aversion. Not once during the six months of the conference did the president express a wish to meet the generals of the army of which he was commander-in-chief. He studiously ignored their existence. General Pershing was consulted three times in this period on purely routine military matters. Secretary Lansing and his colleagues, Mr. White and General Bliss, worked in water-tight compartments. They had no communication with the president except through occasional letters, invariably ignored. Most of their information concerning the inside of the negotiations was gleaned from conversations with members of other delegations, from press correspondents, and by sounding the "Silent" House or his assistants, apparently selected for a capacity to keep their mouths hermetically sealed. As we read through the pages of Mr. Lansing's narrative we cannot escape the feeling that our criticisms of the manner in which the negotiations were conducted fell far short of what the actual facts called for.

Mr. Lansing's narrative justifies the attitude of THE FAR EASTERN REVIEW, whose publisher, then in Paris, strongly advocated that the German rights in Shantung be surrendered to the allies in the Peace Treaty, leaving Japan or some other power or powers as trustee, pending the convocation of a separate international convention in which the whole case of China could be presented and her status determined for all time.

Mr. Robert Lansing
Former Secretary of State at Washington

This sensible solution did not, however, harmonize with the set purpose of those determined upon "making an example of Japan." If the American delegation lacked a program in other matters connected with the peace, it held most positive views about the disposition of Shantung. In his narrative, Mr. Lansing correctly sums up the Shantung question from the international legal aspect in the following words:—"In fact any transfer or disposition of rights in Shantung formerly belonging to Germany was a transfer or disposition of rights belonging wholly to China and would deprive that country of a portion of its full sovereignty over the territory affected."

Further on in his narrative, he says, "on the 21st of April Baron Makino and Viscount Chinda called upon me in regard to this question, and I frankly told them that they ought to prove the justice of the Japanese claim, that they had not done it and that I doubted their ability to do so. I found, too, that the president had proposed that the Five Powers act as trustees of the former German rights in Shantung, but that the Japanese delegates had declared that they could not consent to the proposition, which was in the nature of a compromise intended to bridge over the existing situation that, on account of the near approach of the completion of the Treaty, was becoming more and more acute.

"On April 26, the president, at a conference with the American commissioners, showed deep concern over the existing state of the controversy, and asked me to see the Japanese delegates again and endeavor to dissuade them from insisting on their demands and to induce them to consider the international trusteeship proposed. The evening of the same day the two Japanese came by request to my office and conferred with Professor E. T. Williams,

the commission's principal adviser on Far Eastern affairs, and with me. After an hour's conversation, Viscount Chinda made it very clear that Japan intended to insist on her 'pound of flesh.' It was apparent both to Mr. Williams and to me that nothing could be done to obtain even, a compromise, though it was on the face favorable to Japan, since it recognized the existence of the German rights, which China claimed were annulled."

Pending the promised Japanese rejoinder to Mr. Lansing's statement that Viscount Chinda and Baron Makino called upon him in person, a statement that has been denied by the Japanese delegates, there is one phase of the Shantung controversy that seems to have been ignored by all historians of the peace. Japan had pledged her word that Kiaochau would be restored to China, and during the course of the peace negotiations her delegates gave an oral promise to the Big Three to the same effect. The mistake of the American and Chinese delegations consisted in refusing to accept the word of Japan as sufficient guaranty that she would fulfill her promises. They insisted that Japan's pledges had been lightly broken in the past, and she should now put them in writing. Her honor was placed in question.

Before leaving Peking, the head of the Chinese delegation, Minister Liu Cheng-hsiang, had agreed to work in co-operation with the Japanese at Paris by adhering to the understandings arrived at between the two governments to settle the Shantung question amicably between them at the proper time. When Minister Liu arrived in Paris, and the above fact leaked out, he was discredited and set aside by the other members of his delegation, who leaned upon America to save them from dealing direct with Japan.

The evidence shows that Japan had paved the way to avoid any controversy over Shantung at the conference, but from the day the American and Chinese delegations arrived at Paris, a set plan was adopted and followed to have the case adjudicated in the Treaty. Had there been at the outset of the negotiations the slightest indication of a desire on the part of the American and Chinese delegations to meet Japan half-way by proposing a separate international convention or committee to take up the Shantung question in a general presentation of China's problem, there is no doubt that Japan would have accepted the opportunity to have the future status of the country definitely determined.

This, however, was opposed to the program of those who wanted to make Japan the scape goat for all of China's woes.

This then is one of the reasons why Japan was constrained to insist upon the recognition of her claims in Shantung, solely to save her face in China and her honor amongst the nations. America has promised independence to the Philippines. Our national honor is involved in the carrying out of that promise. Had the Filipinos at the peace conference demanded the right of "self-determination" and enlisted the sumpathy of the other powers, and, led by Japan, insisted upon a written assurance giving the date when the United States would withdraw from the Islands, we would have accepted it as an unjust interference, and would probably have left the conference somewhat incensed. Its a poor rule that does not work both ways.

This will help to explain why the Japanese commissioners declined to accept a last moment solution based on a temporary transfer of the German rights to the allies in the Treaty, pending the convocation of a general conference. For five months the American and Chinese delegations had rejected a compromise. Only when all hope of winning their point was lost, did they seek one. It was then too late.

The mere fact that such a compromise was proposed by Mr. Lansing is evidence that he was not adverse to such methods in order to save one of his own principles. Mr. Lansing's narrative is an arraignment of the president for sacrificing his ideals and convictions in other matters in order to save the league. He devotes four pages to a very careful analysis of the Shantung question, denying the existence of any German rights at the time of the conference, yet at the last moment, both he and Mr. Williams were apparently quite willing to follow the example of the president and surrender their principles in order to avoid defeat. By the refusal of the Japanese delegates to accept the compromise, the American delegates realized they had lost the battle. It was then that they decided that the president should be told of their attitude, because they were unwilling to have it appear that they in any way approved of acceding to Japan's claims or even of *compromising* them." It was left to General Bliss to "bell the cat." This he did in a letter dated April 29. It was a splendid letter, typical of the soldier-diplomat who wrote it. It seems a great pity that his advice was not solicited earlier in the negotiations. Had he been informed that the administration was compromised to have the *whole* case of China taken up at the conference, and that this sensible program had been set aside, there is little doubt of what his attitude would have been from the outset. Unfortunately, it was too late for even his advice to carry any weight.

The most remarkable part of Mr. Lansing's narrative is where he accuses the Japanese delegates of employing threats to "coerce the arbiters of the Treaty terms by menacing the success of the plan to establish a league of nations—to use an ugly word, it was a species of "blackmail" not unknown to international relations in the past." To this he added, "the Japanese threatened to decline to accept the covenant of the league if their claims to the German rights in Shantung were ignored." There was a great deal of conflicting testimony floating around Paris at that time, especially as to the explanation given to the Chinese to explain their defeat. Now the Japanese delegates deny that they held any conference with Mr. Lansing, and or that they used any undue pressure upon the president to have their claims accepted. Their side of the story has still to be told.

However, let us assume that the Japanese did bring pressure to bear upon the Big Three in order to gain their point. As we read through the narrative of Mr. Lansing and the works of othr reliable historians of the peace, we cannot escape the truth that nearly every nation applied pressure upon the conference to gain its ends. In his chapter on "The Proposed Treaty with France," Mr. Lansing bears witness to the fact that the controlling reason for promising the alliance and negotiating the treaty was the president's conviction *that it was necessary to make this concession to the French in order to secure their support for the covenant* and to check the disposition in certain quarters to make the league of nations essentially a military coalition under a general international staff organized and controlled by the French." *"On the morning of June 28, the same day on which the Treaty of Versailles was signed, the protective treaty with France was signed at the president's residence by M. Clemanceau and M. Pichon for the French republic and by President Wilson and myself for the United States, Mr. Lloyd George and Mr. Balfour signing at the same time a simlar treaty for Great Britain."*

Mr. Lansing does not tell us by what means Mr. Lloyd George induced the president to surrender the second requisite in his Fourteen Points providing for the principle of the "Freedom of the Seas," though other equally or better informed writers, do not hesitate to openly state that its elimination was the first condition to Britain's acceptance of the league. Mr. Lansing does not insinuate that Italy resorted to "blackmail" when her delegation left the conference in a huff over Fiume.

Mr. Lansing, as the American secretary of state and peace commissioner, had no difficulty in surrendering his principles and compromising the nation to come to the armed assistance of France, in order to obtain the adhesion of the latter power to the league. His own testimony is conclusive evidence that this was another last-minute compromise accepted on the very morning that the Versailles treaty was signed. For Great Britain, France, Italy, and other powers to exert pressure upon the president to attain their ends, was eminently proper and justified, even to the extent of overturning the American tradition against entangling alliances. For Japan to insist upon recognition of claims which she pledged to restore to China, became "blackmail." Mr. Lansing is not consistent in his narrative, and in this one statement, provides

evidence of the Japanophobia which characterized the Far Eastern diplomacy of the past administration. Mr. Lansing and the president invited certain defeat for America and China over the Shantung question, by rejecting competent advice to have this matter brought up in a general presentation of all of China's troubles. It is difficult at this late date to understand why the president and his secretary of state ignored their promises to the nation to follow this procedure. It was pointed out to the Chinese and American delegations at Paris, that if they were defeated on the Shantung issue, it meant a recognition of the 1915 treaty covering this province, and that this would carry with it recognition of the validity of the entire series of treaties signed as the outcome of the Twenty One Demands. As there was no head, no direction to the American delegation, no cohesion and no program, and the Chinese blindly allowed themselves to be led by sentimental promises, the end was inevitable. China went down to defeat, and faced the cold, hard fact, that acceptance of the Shantung treaty made valid the 1915 series of treaties. It has taken over two years to discover their mistake, and they are now making heroic efforts to have the Twenty One Demands placed before the league of nations as the only way out of the muddle. The experts and advisers who rejected sane advice at the conference, have now adopted this advice as their own, and are striving to win an eleventh-hour victory. There is a moral to the story of Mr. Lansing and the defeat of China at the conference. China had a good case, one that could have been advocated and won had it not been manhandled. It was manifestly impossible to take the Shantung question out of the general problem of China, concentrate fire upon Japan and place the case before a tribunal of three, in which two of the judges were compromised to stand by Japan. China and her advisers have now adopted the other line of action, but with the United States out of the league, the outlook for victory is far from promising. The advisers of China who are now urging that the Shantung question be shelved in order to present the Twenty One Demands before the league, are well aware that within a year, China will invite Japan to get out of Liaotung in 1923, and call upon the United States to support her. America may then be squarely pitted against Japan.

G. B. R.

* * *

The Chihli Construction Corporation

A BIG development company has been launched at Tientsin for the purpose of establishing industries, opening ports and exercising municipal powers in leased areas. It is called the Chihli Construction Corporation, capitalized at $35,000,000, of which, one-fourth is said to have been paid up. From information at hand it would appear to be a joint Sino-American enterprise, though the American interests do not openly appear except in a reference to a gentleman by the name of Smith.

The main purpose of the corporation is the establishment of a modern commercial port somewhere along the sea-coast of Chihli province, with the right to construct harbors, breakwaters, lighthouses, wharves, godowns and other necessary establishments, as well as the power to exercise municipal authority within the lands acquired by lease. The company is to have the right of eminent domain to purchase all public lands within the leased area, lay out and construct roads and streets, operate lighting, drainage, water and other public utilities, erect residences, offices, etc. The scheme provides for a power station at Tangshan or another coal producing district, to furnish electric current to the proposed port and city. The corporation is to have the right to organize a municipal council appointed from the members of the company, with the right of veto in the hands of the chairman, and this carries with it the right of organizing police and other forces for the preservation of public order. In other words, the corporation is to create a modern port and city and have full powers to govern, impose and collect taxes without interference on the part of the Chinese authorities.

The incorporation agreement has been signed by Tsao Jui, the civil governor of Chihli, and it is now awaiting sanction from the department of agriculture and commerce at Peking.

It apparently took some time for the facts to sink into the minds of the Tientsin merchants and property owners, invariably wideawake to oppose any improvement scheme in the north which might deflect trade from the port and undermine the value of vested interests. It was not until some time after publication of the agreement that a meeting was held to petition its cancellation. In this petition the name of a "certain foreigner," Mr. Smith, an American, appears for the first time. The opposition is said to be so strong that the ministry of agriculture and commerce dares not sanction it under present conditions.

It is inevitable that the creation of a new harbor along the Chihli coast which must eventually relegate Tientsin into a tributary port will meet with stubborn opposition not only from powerful Chinese but equally important foreign interests.

The improvement or creation of new ports in China is and always will be a most delicate matter. Yet, as the country is developed by railways, and trade increases, a solution must be found to this problem. Tientsin seems to be the first port to face new conditions, yet the same problem has to be met at Shanghai, where the solution seems to be same, the creation of a new express port somewhere near the Yangtsze Cape connected with Shanghai by railway. Sooner or later, Hongkong also will be called upon to meet the competition of a new port at Canton, within Chinese jurisdiction. Other schemes are on the tapis, which, if carried out, must seriously affect the present standing of older ports.

In view of the present condition of China, it seems deplorable that such huge schemes involving as they do the direct credit of the central Chinese government indirectly through the provincial governments, cannot be brought under the consortium and so eliminate international friction and jealousies. The same rule applies to Shanghai and with greater force to Hongkong. The southern Chinese are most anxious to obtain funds to construct a modern harbor at Whampoa or Canton, so as to be independent of Hongkong. Some day, undoubtedly, this problem will have to be faced, as we never can tell when an enterprising concession hunter will walk away from Canton with the contract in his pocket and move heaven and earth to influence his government to support him in his legal rights to do business with the Chinese authorities direct. It would seem that such schemes fall under the scope of the consortium, where they can be handled without arousing international discord and worse.

* * *

Squeezing the Orange Dry

THE fact that at times agitation is not based or inaugurated through sincerity in belief, makes it dangerous to support a movement in which far reaching effects are visible. Under titles such as "China Sells Eggs while Chinese Starve" and "Food from Starving Mouths," certain newspapers in America are deploring the fact that "Chinese eggs are being dumped on the American market, millions of pounds, forcing a break in prices to the lowest February quotations since before the war," also that there is "No food for China's starving, not even weeds to eat, while Chinese food is selling in the American markets, underselling American food!"

Axe to grind utterances are difficult of seperation from those which arise as a result of careful thought and unbiased decision, for where bias begins and where altruism ends in this world, even the least cynical of humans cannot with certainty point. The law of averages, the law of cause and effect and all the other man made explanations to states and happenings, all

give voice to arguments which might easily be quoted in support, or otherwise, of this bone of contention with certain American editors. The two sides to every question make it possible to wear the shoe on either foot. A view, which will coincide with that maintained, no doubt, by the Chinese concerned, is voiced by Dr. Seligman, who, in a public statement, has said: "To ask that a great industry like the Chinese egg export business be stopped because of the famine is simply to transfer a difficulty from one part of China to another. Immense numbers depend on the egg export business for their living. Stop this business, and you have another set of starving people on your hands. What right have we to ask that a certain set of Chinese business men ruin their business for the benefit of others of their countrymen? We have never set the Chinese such an altruistic example. There is a practical side to every question, even to such a tremendous disaster as this famine."

Replying to this, a New York paper states, "After pondering over the Seligman assertion, we come to the conclusion that it does not mean anything. A famine is not a difficulty, it is a calamity, and eggs will relieve it. We are passing the hat around in America to provide food for Chinese who are starving to death. These dying persons are in China, and while they perish, their neighbors send food to this country for the purpose of selling it. Not all the arguments of all the 1,500 professors in Columbia University can convince Americans that this is right. For one thing, the eggs are not needed in America, and they are needed in China."

A Massachussettes paper claims to have discovered the secret of the problem. It says, "On the very day that Chinese eggs at 52 cents a dozen 'broke' the Minneapolis market, Chinese eggs were selling at 25 cents a dozen in China. There's the answer! The starving Chinese lacked the 25 cents. The problem, then, isn't so much a greater production of food in the world, as it is a more equitable distribution of the 'power to buy,' without which individuals starve, and famines sweep over entire countries."

Interest in this vital subject is occassioned in China largely through propinquity, and, as a factor in the problem of Economics, in America. Apart from the many sides of the issue that have already been presented, there is one which stands prominently in the offing, a possibility which looms up larger and larger as each year goes by. It is this. If the huge interests which have established themselves in China for the purpose of scouring the whole country for live stock, poultry and eggs for export to foreign lands continue to secure their government's support in unchecked aggrandisement, thus steadily increasing the cost of living in China and actually endangering the food supply, there will come a time when China will depend entirely on the outside world for her sustenance. There can be no quarrel with vested interests which have an eye to the future, who are concerned with the future of the country in which they are exploiting, and who curtail their activities within reasonable limits in consequence, but when huge and immediate profits, disregard for the welfare of the many, and Octopus-like greed actuate their activities, then there is just cause to condemn, to exercise pressure and to regulate this traffic in foodstuffs from China to the rest of the world. Exports there must be from all countries, foodstuffs included, the balance of industrialism being maintained as a consequence, and it is only when a danger to this balance threatens, the mulcting of a country's riches, her life blood, which the white man's silver wisely distributed makes possible, that the cry of "Halt" should be made. If the white man is imbued with the slightest element of altruism in his dealings with the Chinese let this be a matter in which he can show it. There may come a time when the old patriarch will stir himself to say "If this is what industrialism brings us, we will have none of it" and the cry will echo throughout the land. It is not what we can sell or buy to-day that matters so greatly. Our surplus and wants of to-morrow, a careful setting for their disposal and purchase, and more cordial, more eager the co-operation which we will meet with to-day.

Foretells Trade Improvement in Orient

Prominent Banker's Views

A SLIGHT improvement in business conditions in the Far East, the first rays of promise seen in that part of the world for months, was reported by William N. Enstrom, vice-president of the Irving National Bank, who has just returned from an extended trip in the Orient. In China, Japan and the Philippines, Mr. Enstrom said, bankers and leaders in commercial activities believe that the business trend from now on will be upward. The situation still is far from good, but to some extent merchandise is moving again.

Mr. Enstrom left New York in September. In Japan, he visited the cities of Yokohama, Tokyo, Nagasaki, Osaka, Kobe, Kyoto and Shimonoseki, all centres of manufacturing or trading industry, and thence proceeded to Fusan and Seoul in Korea. From there his itinerary included Mukden in Manchuria; Tientsin, Peking, Nanking, Hankow, Shanghai and Hongkong, in China, and Manila. On the return trip he revisited Hongkong, Shanghai and several cities in Japan.

"When I first reached Japan," Mr. Enstrom said, "business was about as bad as it could be. Bankers and business men were downcast. The depression was felt the more keenly because it followed immediately on the heels of the biggest boom Japan had ever known. Japanese industry and commerce flourished, as we all know, during the war, but the expansion of that period was not to be compared with the boom that began in 1919 and continued until the early part of last year.

"In this period, prices, which had begun to rise during the war, moved still higher. Importers bought heavily abroad. Warehouses became choked and the docks were piled high with goods, while large shipments of other goods were on the way. In the meantime, home production had been boosted up to the top notch. Under domestic and foreign demand, great quantities of goods had been turned out and large stocks had accumulated. Seemingly the possibility of a lessening in the demand had not been taken into consideration.

"Then came a hesitancy in buying, followed by an entire cessation of orders. Japan had a tremendous quantity of merchandise which it had produced or bought at high prices. The banks, sensing trouble, stopped making loans. The merchants could not sell their goods and the manufacturers lost their markets. At one time prices offered for some American goods were less than the actual cost of production in the United States. Merchants had difficulty in meeting their obligations. Some failed and many were embarrassed. A period of absolute trade stagnation followed.

"Many industries had to shut down or curtail production, though not all. The big shipyards and the steel and iron industries, for instance, are occupied chiefly on government work, and were able to continue operation. But many of the textile mills—one of Japan's most important industries—had to close. Unemployment increased and wages fell. A great deal of Japanese shipping was tied up for lack of cargo.

"Now things seem to have 'turned the corner.' When I passed through Japan on the way out, one of the leading merchants in the country told me he had not seen an order for goods in months. When I saw him on my way back he said that queries were being received and some orders. In the meantime, the large stocks of merchandise to some extent were being reduced. Trading was still on a small scale, but was becoming more active.

"Korea, or Chosen as it now is, felt the depression like all other eastern countries, but the interests of Korea are primarily agricultural and her problems, in consequence, comparatively simple. Her foreign trade consists largely of the sale of staple products to Japan and the purchase of manufactured goods from the Japanese in return. There is not a great deal of complicated commercial machinery to get out of order.

"The conditions in China did not differ materially from what I had seen in Japan. The great bulk of China's import business is handled by men of foreign nationalities who distribute their goods through native dealers. The slump caught both the importers and dealers with large stocks of merchandise on their hands. Here the situation was further complicated by the heavy drop in the buying power of silver. This, however, is not the first time that China has experienced a commercial crisis and business men told me that the latest trouble was no worse than others that had occurred. One of the most prominent foreign bankers in China said that in his opinion the crisis had passed and that the future would see a steady, though not rapid, improvement.

"Conditions in the Philippines were aggravated by a currency shortage. Normally the Philippines maintain trade balances in other countries with the money received for their exports, and pay for their foreign purchases from these funds. After the overseas demand for Philippine goods ceased, imports soon wiped out these balances. Shipments continued to arrive and the importers had no medium with which to make payment. The treasurer of the Philippines was authorized to issue bills of exchange on the United States, but the Philippine merchant had to pay for these in Philippine treasury notes. In consequence, heavy inroads were made on the amount of currency in circulation.

"Considerable damage has been done to our commerce in the Orient by a certain type of American trader who invaded the Far East during the war, attracted by the unusual opportunities for profit which had been created. This is particularly true in China where the people, though very friendly to the United States politically, have been disappointed by the methods of these irresponsibles who considered only immediate profit. Other countries have also suffered, though in a lesser degree, as the volume of trade of many of them was greatly restricted during the war, and in the case of Germany was cut off altogether. German manufacturers are now investigating trade opportunities in the Orient. Just before I left Japan, sixty-eight Germans arrived on one steamer at Yokohama to look over the field."

Ambassador Morris

The Democrat Who Followed Roosevelt's Advice and Became Famous

IN the March number of THE FAR EASTERN REVIEW, we invited attention to the deplorable lack of trained American diplomats, and added "if we except Ambassador Morris, who has lived up to the highest traditions of American diplomacy, the nation has not developed one practical Far Eastern statesman to guide it along the right path." We just had to give credit where credit was due. Ambassador Morris stood apart amongst democratic diplomatic appointees, one of the few who had a real grasp on the international political situation and succeeded in preserving friendly relations with Japan at a time when others seemed intent upon precipitating a break. If we had not had Morris at Tokyo to counterbalance Reinsch at Peking, who knows what might have occurred.

We now learn from the *Philadelphia North American* of March 5, the reason why Ambassador Morris made such a distinguished record and preserved the highest traditions of American diplomacy. He sat at the feet of Roosevelt and absorbed the clear, sober thoughts of a practical statesman, when he could get no aid, advice, comfort or direction from President Wilson or the state department.

The story in the *North American* is told by Mr. Thomas Robins of Philadelphia, a trusted friend of Roosevelt, who declined to give the facts out for publication until after March 5.

Mr. Robins says:

"In the summer of 1917, President Wilson sent to the senate the name of Roland S. Morris, a Pennsylvania democrat, for appointment as ambassador to Japan. After Mr. Morris was confirmed by the senate, he spent two weeks in Washington, receiving his instructions and studying our diplomatic organization. The post of representative at Tokio is one which requires not only tact and ability, but a thorough knowledge of our relations with Japan during the present century. At the end of his sojourn in Washington, Mr. Morris came to see me in my office in Philadelphia and told me of certain difficulties which he had encountered in acquiring this indispensable knowledge.

"'There are certain things,' he said, 'which I cannot get in Washington. Nobody knows anything about them. There is only one man who does know and that is Theodore Roosevelt. He has the respect of the Japanese, for he has always been careful to remember their susceptibilities and to respect their national pride. At the same time, he has always been firm in upholding the American position in discussing ticklish questions with them. He knows all the ins and outs of the Japanese intentions and of our side of the case. Can you get me an interview with him?

"I was not sanguine. Not many days before, Colonel Roosevelt's offer of his own services and those of 175,000 men above draft age had been refused by the administration, in spite of the desire of the allies that they might have the benefit of his personality and enthusiasm in France. I did not see how I could ask him to assist Mr. Wilson's appointee under the circumstances. It would have been a very simple matter for the colonel to decline. He had only to plead an indisposition to interfere in the affairs of the administration. He could have alleged a 'delicacy' in discussing public business now in the hands of a president and secretary of state with whom he had no relations.

"I somewhat reluctantly assented to Mr. Morris' request and wrote to Colonel Roosevelt. I expected to be turned down. By return post I received his reply. He cordially complied with my request. He invited Mr. Morris and myself to dine with him at the Harvard Club, on the night of July 20, 1917. We spent five hours together, he giving his best to my friend, in the public interest.

"He told him everything, beginning with the Japanese-Chinese war and ending with his retirement from office. He advised him about this, he cautioned him about that. He defined exactly the limits within which we could acknowledge Japan's supremacy in the Orient. He unraveled the intricacies of the race question in California. He drew without limit upon his immense stores of diplomatic information, and at the end of the evening, I am sure that Mr. Morris appreciated that he had received a preparation for his arduous post that he could never have hoped to gain from any one else.

"The colonel was not insensible to the humor of the situation. His enjoyment of it was the only requital which he exacted for treatment from the administration, which was as ungenerous as it was ill-judged."

By the Way

IN the editorial under the title "Balaam's Pets" reference was made to the editor of *Collier's Weekly*. Since writing it, news has been received in the Far East that a report is current in New York that Mr. Richard Washburn Child, who is the editor of *Collier's Weekly*, has been selected as United States ambassador to Tokio. In the event that the report is correct a short resumé of Mr. Child's career might be of interest.

Mr. Richard Washburn Child, who is a writer, publicist and lawyer, was born at Worcester, Mass., on August 5th, 1881. He graduated from Harvard University in 1903 and received the degree of LL.B. in 1906. In the same year he was admitted to the bar.

As assistant to Mr. Frank A. Vanderlip, president of the National City Bank of New York, he did good work during the war, volunteering for war finance work for the United States treasury department.

The world knows Mr. Child better as a writer of fascinating fact and fiction articles and stories, many of which have appeared during the past ten years in the *Saturday Evening Post* and other prominent American periodicals. He has occupied the editor's chair of *Collier's Weekly* for about a year succeeding Mr. Mark Sullivan. During the presidental campaign last autumn Mr. Child superintended the pro-Harding publicity.

Shanghai Improvements—Waterworks Extension

THE water supply of the International Settlement of Shanghai is in the hands of the Shanghai Waterworks Company, Ltd., the Company this year completing the fortieth year of its existence, having been registered in London in 1880.

Water was first turned on by the then Viceroy, Li Hung-chang, on June 29, 1883, and up to that time residents in Shanghai had to rely on a supply of water clarified by native alum and delivered in water carts. The Company has always worked under agreement with the Municipal Council, the last having been signed in July 1905, when the Company issued to the Council 975 shares free of cost. Since that date, the Council has substantially increased its holding of shares and the community has, therefore, a considerable interest in the prosperity of the Company.

The Company is controlled by a board of directors in Shanghai; its interests in London being looked after by a committee. The share capital of the Company at its inception was £100,000; the authorized capital at the present time is £1,000,000, of which over £500,000 has been subscribed, in addition to nearly one million taels of debentures.

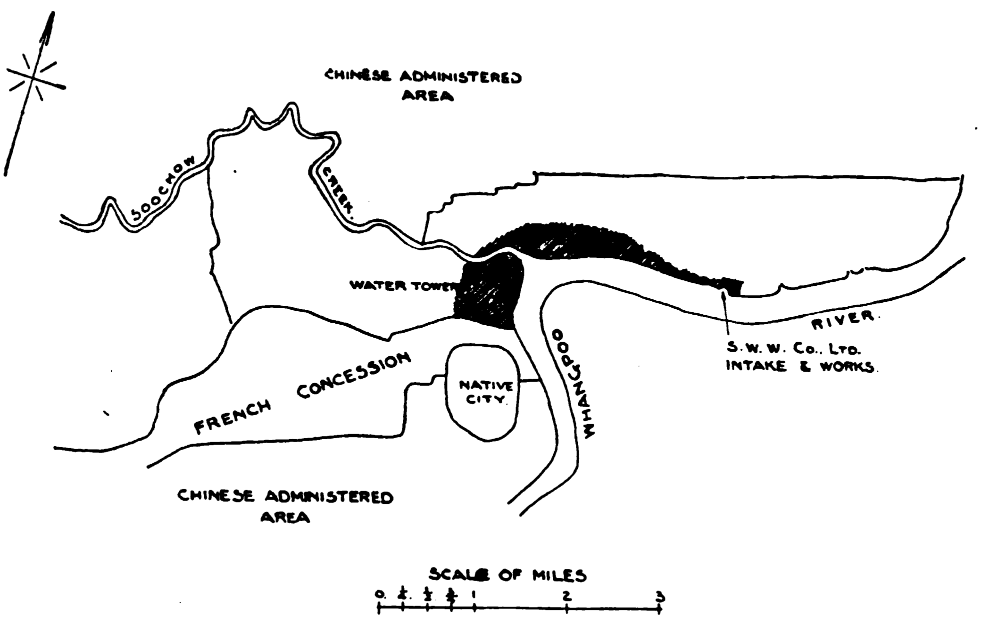
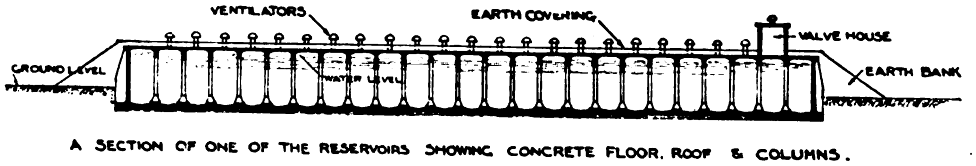


Fig. 1. Showing area supplied thirty years ago.



A SECTION OF ONE OF THE RESERVOIRS SHOWING CONCRETE FLOOR, ROOF & COLUMNS.

SCALE 40 FEET TO 1 INCH

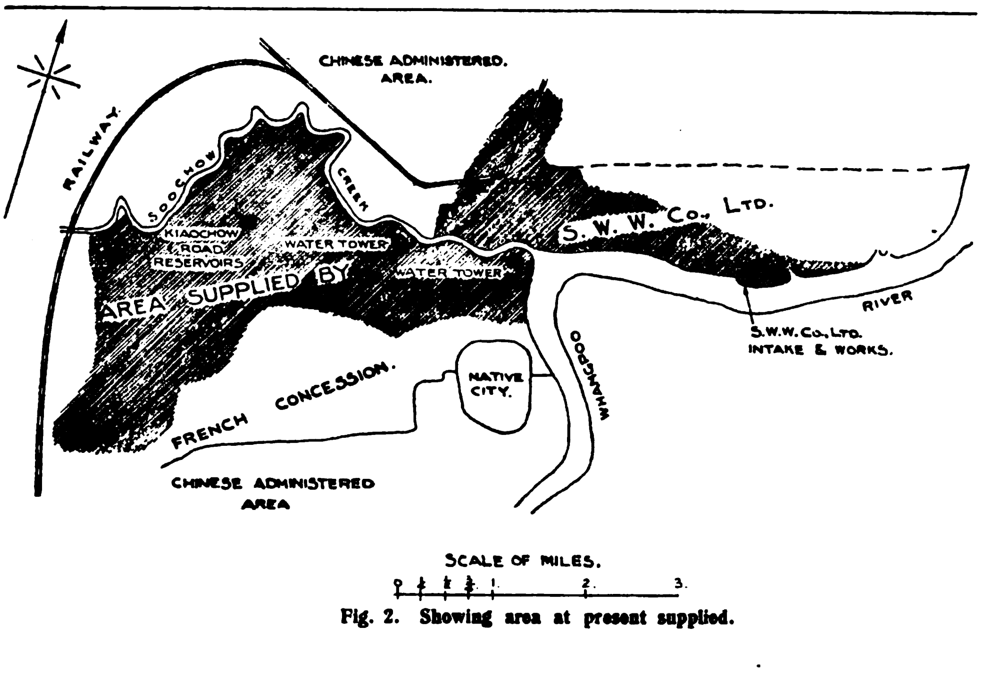


Fig. 2. Showing area at present supplied.

The Waterworks are situated near the eastern end of the Settlement (Fig. 1), water being taken from the Whangpoo river (which is tidal), settled, filtered and pumped into the distributing system. Shanghai is built on an alluvial plain, a few feet only above water level and as there is no hill available for service reservoirs pressure is maintained by continuous pumping.

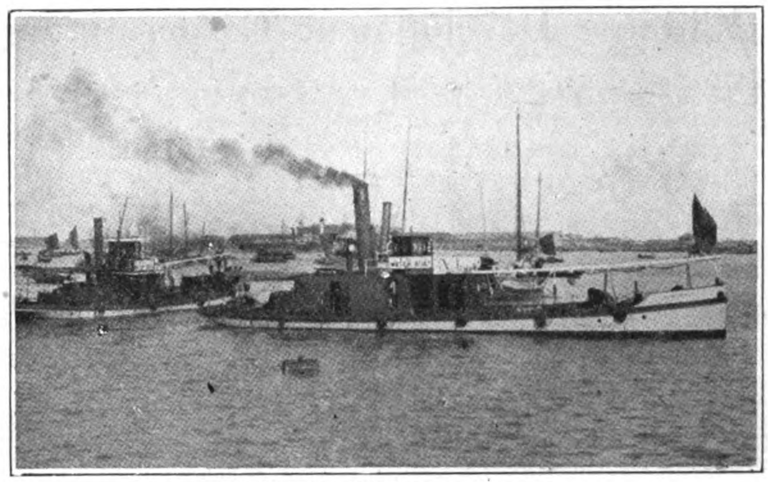
The Whangpoo water is very turbid and is, at the works, first admitted by gravity and then by pumping into subsidence tanks with a total capacity of 42 million gallons, where the heavier suspended matter settles. The pumps employed in filling these tanks are four in number. All are centrifugal, two being steam and two electrically-driven, the motors of the latter being each of 300 B.H.P. These pumps were supplied by Messrs. Gwynnes, Ltd., and the Shanghai Dock & Engineering Co., Ltd., the motors being built by the British Westinghouse Co. Experiments are now being made in the use of coagulants, and it is possible that in the future all water will be treated by this process.

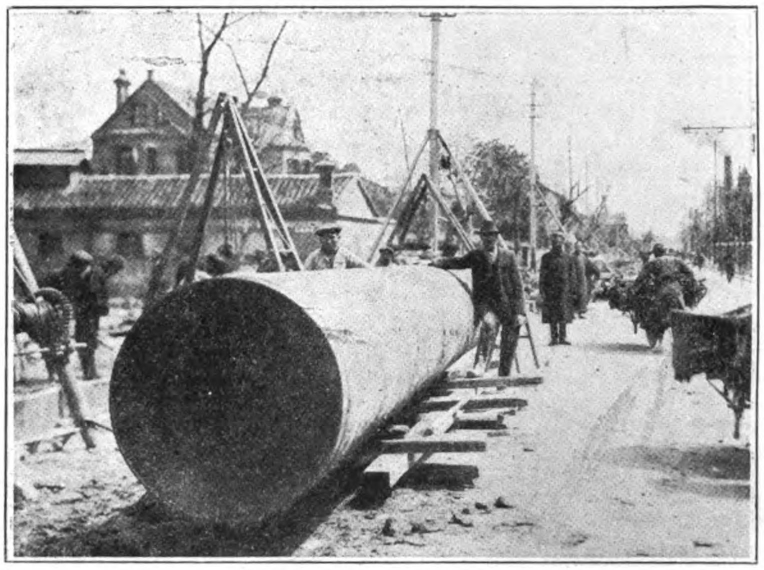
Water is decanted from the subsidence tanks through floating draw-off pipes, and is pumped by suction gas and steam-driven centrifugal pumps to a raised service reservoir, whence water flows by gravity to the filters.

These pumps were supplied by Messrs. Gwynnes, Ltd., and the Shanghai Dock & Engineering Co., Ltd., the suction gas engines and plant being constructed by the Campbell Gas Engine Co. and the National Gas Engine Co.

Filtering is on the slow sand system. There are 36 filter beds with a total surface of 570,000 square feet and filtering is downward at an average rate of about 1.5 gallons per square foot per hour. The filter beds are scraped in the usual way by hand, sand being washed in boxes by hand and also by Messrs. Hardy & Padmore's sandwashing machines. The question of employing rapid sand filters in conjunction with a coagulant, and possibly chlorination, is under consideration at the present time. Three additional slow sand beds are now under construction.

From the filters the water passes by gravity to two covered clear water reservoirs,


A Carrier of Water to Steamers


Laying the 40-in. Main

and thence flows to the main pump wells. The six main pumps are steam-driven and are, with the exception of one differential pump, of the horizontal compound condensing reciprocating type. These pumps were supplied by Messrs. Hathorn, Davey, Manlove & Alliott, Glenfield & Kennedy and Worthington-Simpson. Contracts have now been placed for two additional pumps, one of the reciprocating type from Messrs. The Worthington Co., of America, the other a high lift centrifugal pump from Messrs. Allen & Sons of Bedford.

Steam is supplied to the main pumping engines by Lancashire boilers working at pressures of 80-lbs. and 120-lbs. per square inch. Steam is superheated and Green's economisers are installed with the newer boilers, which are fed by the underfeed mechanical stokers.

The pumping plant is well maintained, smaller repairs being carried out in the Company's workshops.

Owing to the increase in consumption in the western end of the Settlement, and to reduce the peak load on the pumping and filtration plant during the time of maximum consumption, reservoirs are now being constructed in the western portion of the Settlement. These reservoirs are to be filled at night and the water pumped therefrom by electrically-driven pumps into the system during the period of heavy consumption. They are being built in reinforced concrete throughout.

The Company maintains a laboratory for biological and chemical analyses and research work.

Distribution System

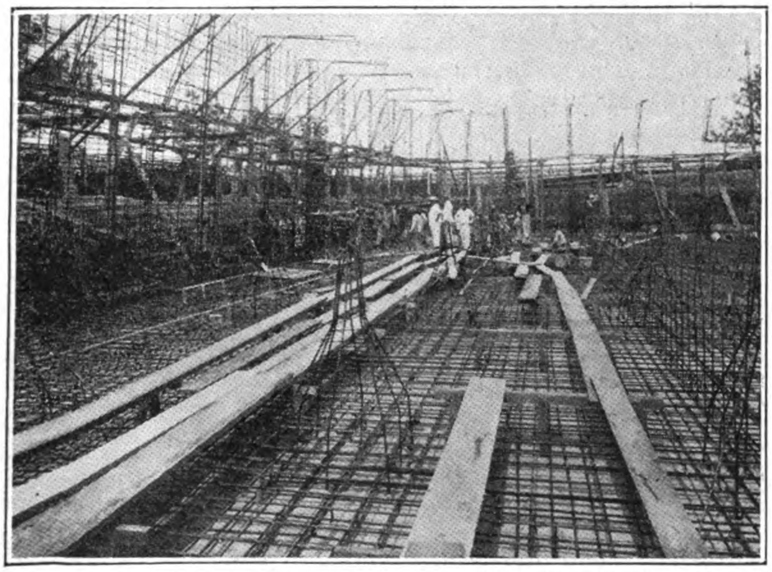
From the pumping station water is pumped iuto the distribution system through four pumping mains one of 30-in., one of 25-in. and two of 20-in. diameter. These mains, as are all trunk and distributing mains, are of cast-iron, but the Company are now laying steel pipes of 40-in., 33-in. and 36-in. diameter, these are being made by Messrs. Stewarts & Lloyds of Glasgow. The mains, which now have a total length of 112½ miles, are well supplied with valves and hydrants, the latter being now fitted with two 2½-in. delivery outlets and a 4-in. suction connection for the Municipal Fire Brigade's engines.

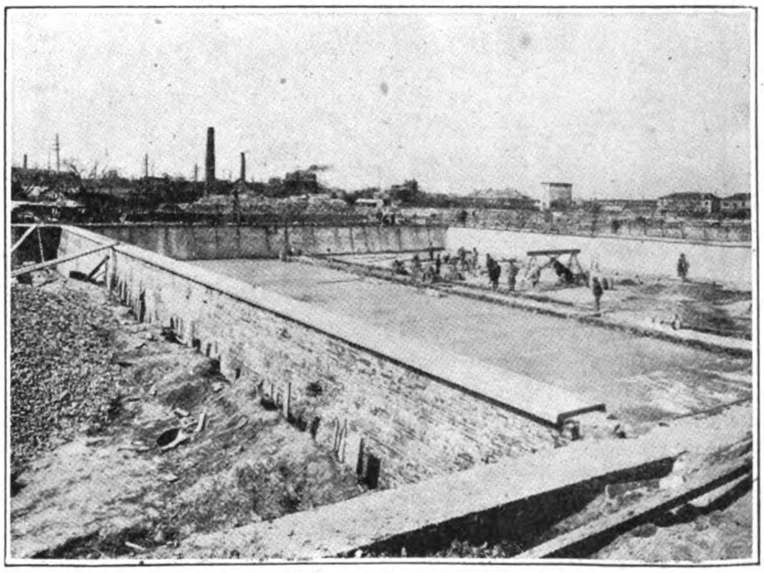
The larger mains are carried over the larger creeks in steel.

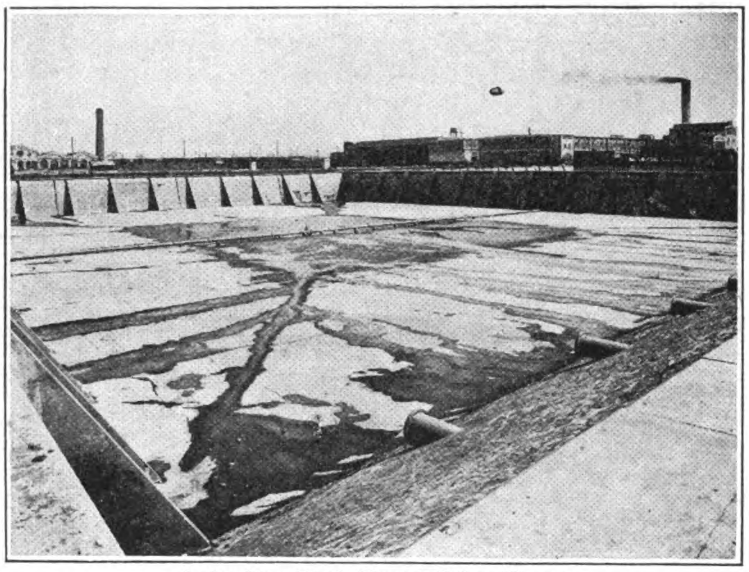
There are two water towers in use, the first, with a height of 100-ft. and a capacity of 100,000 gallons, is situated in the centre of the Settlement and is an exceptionally handsome structure. The second tower has a height of 125-ft., and is situated in the western district.

Water is supplied for domestic purposes at rates varying from five per cent. to two per cent. of the rental : according to the building supplied. Water for industrial purposes is supplied by meter.

The works were originally designed to supply three million gallons per day. The consumption at the present time has exceeded 23 million gallons per day, the hourly demand being over 1¼ million gallons at times. The Company maintains a well-organized waste detection department. A staff of day inspectors keep a careful watch over fittings and waste, while underground leakage is detected by means of Deacon's meters, which are used at night, this work


Reinforced Concrete Reservoir, Kiaochow Road


A Slow Sand Filter Bed under Construction



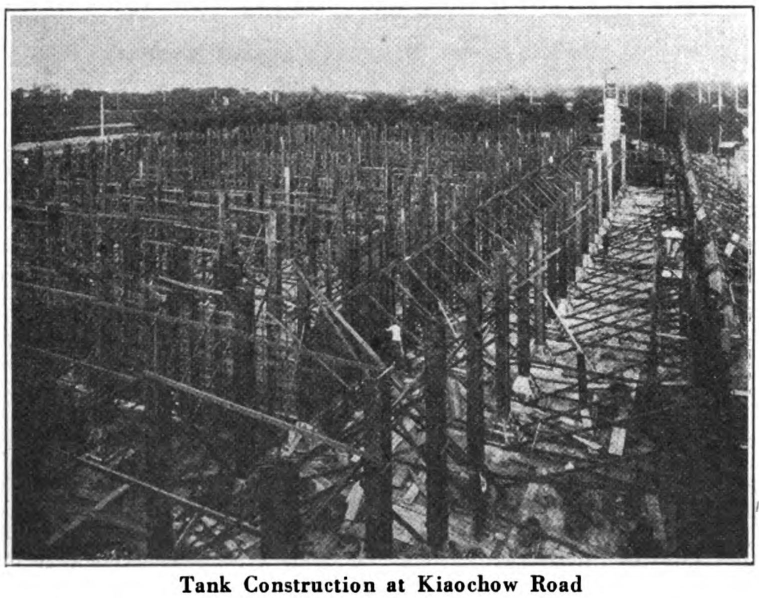
A Settling Tank Emptied for Cleaning

being rendered difficult through the fact that consumption of water in Chinese houses never entirely ceases as in European towns.

The Company maintains a well-equipped fleet of water boats, four being steel steam boats with capacities of from 150 to 75 tons, there is also a steel lighter which can be handled by the Company's launch. These water boats are equipped with steam-driven pumps and compare very favourably with water boats found in European ports.

Fittings Department

When water was first supplied to consumers, the Company found it necessary to undertake the installation of water-fittings, and the department thus formed has now grown till it is in itself a considerable concern, undertaking every description of sanitary work, including fire protection installations, hot water and steam heating. This department maintains a staff of 13 Europeans and employs on an average 200 Chinese. The greater number of large as well as smaller buildings in Shanghai have been fitted up by this department, whose activities are not confined to Shanghai.



Tank Construction at Kiaochow Road

Large stocks are carried, and the godowns contain anything from a tap washer to a 300-gall. per minute fire pump, or a soap dish to a million B.T.U. boiler.

The interests of the Company are well maintained by a European (mainly British) staff of 44 and a native staff often totalling 800. Mr. A. P. Wood, M.I.C.E., Engineer-in-Chief and Secretary of the Company for the last 34 years, has just retired and his position is now filled by Mr. F. B. Pitcairn.

Chinese Development Corporation

THE Fung Sheng Industrial and Commercial Development Corporation, with offices at 35 Szechuen Road, is a new corporation capitalised at $2,000,000 which represents the entry of leading Chinese financiers into modern lines of business hitherto neglected.

The promoters include Chin Yung-peng, the premier; Pan-fu, the vice-minister of finance; Sun Pao-chi, director of the inspectorate-general of customs; Lu Yung-hsiang, tuchun of Chekiang; Fu Siao-en, managing-director of the China Merchants' Steamship Navigation Company; Shen Lien-fang, chairman of the Steam Filatures and Cocoon Merchants' Guild; Sui Meng-ken, managing director of the Peking-Suiyuan Railway; James H. Lee, Dr. Z. T. K. Woo, general superintendent of the Hanyang Works; and E. Y. Edward Sheng are among the chief shareholders.

The original aim was to organize a firm to undertake the development and management of the vast real estate holdings, industrial plants, mines, and stocks and bonds under their ownership or immediate control.

Realizing the opportunity of a general company to undertake construction deal in stocks, bonds, real estate mortgages, insurance, storage, warehousing and industrial financing they threw open the subscription lists and made it a limited stock company. The corporation is affiliated with a group of Chinese banks, capable of taking care of any large project it may undertake.

The managing director, Mr. E. Y. Edward Sheng, is the oldest son of the late Sheng Kung-pao, and assistant general manager of the Han Yeh Ping Iron and Coal Co., Ltd., president of the Commercial Bank of China, president of the Wah Foo Commercial and Savings Bank, superintendent of the Chinese American Bank of Commerce, and is on the directorate of many other large business enterprises.

Mr. Y. S. K. Lu, one of the assistant managers, is a son of Tuchun Lu Yung-hsiang. Mr. James H. Lee, vice-president of the Wah-Foo Commercial and Savings Bank, and president and promoter of a chain of electrical plants in many of the interior cities, is the other assistant manager.

The board of directors of the company consist of Messrs. Chien Nun-shun, Y. S. K. Liu, Pan Fu, Yao Moo-lien, Shen Lien-fong, Sui Meng-kun, Fu Siao-en, James H. Lee and E. Y. Edward Sheng.

"The Mineral Resources of China"

Prize for Best Essay

Mr. Reginald Le Neve Foster has presented the Royal Society for the encouragement of arts, manufactures and commerce with a donation of £140 for the purpose of founding a prize in commemoration of his father, Mr. Peter Le Neve Foster, who was secretary of the society from 1853 to 1879.

The council have decided to offer the prize for a paper on "The Mineral Resources of China."

The prize will consist of a sum of £10 and the society's silver medal.

The paper for which the prize is awarded will be read at one of the ordinary meetings of the society.

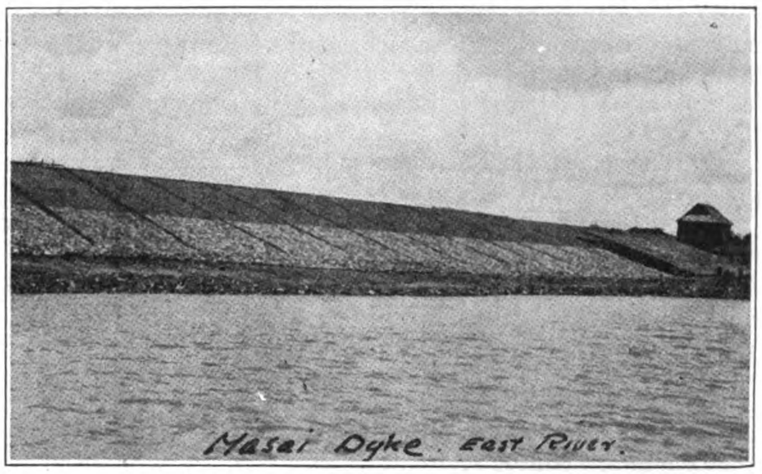
Intending competitors should send in their papers not later than December 31st, 1921, to the secretary of the Royal Society of Arts, John Street, Adelphi, London, W.C.2.

The paper must be in English and type written. It may be sent in under the author's name, or under a motto, accompanied by a sealed envelope enclosing the name, as preferred.

The judges will be appointed by the council.

The council reserve the right of withholding the prize or of awarding a smaller prize or smaller prizes, if in the opinion of the judges nothing deserving the full award is sent in.

Dyke Construction at Lupao, North River



Masai Dyke, East River

Canton Delta Permutation

First Report of Conservancy Board

THE report, with plans, of the activities of the board of conservancy works at Kwangtung, covering the period September 1st, 1919 to June 30th, 1920, though very belated, contains much information of interest to those having any connections with the part of China dealt with, and the more interesting portions of its contents follow.

The devastating floods which in June, 1914, visited the basin of the West, the North and the Canton Rivers, and most parts of the Canton delta, brought into existence the board of conservancy works of Kwangtung. By a mandate of December 31st, 1914, the president of the republic appointed the late Admiral Tan Hsia-heng to be director-general of the board, with instructions to investigate the causes of the repeated flooding of vast areas of land, and to report upon the necessary preventive measures to be undertaken. Realizing the necessity of a thorough knowledge of the hydrographical and topographical features of the rivers, without which any attempt to work out a feasible scheme to ameliorate the floods would prove fruitless, the director-general decided to undertake a scientific survey of the rivers. For this purpose a surveying staff was organized, composed of Chinese engineers with a number of students from the military surveying school at Canton, under the leadership of expert foreign engineers. The survey was commenced in June, 1915, the first objective being to investigate the conditions in the West River valley. The following year, in June, these investigations were completed and the results were embodied in a comprehensive report entitled "The West River Survey of 1915."

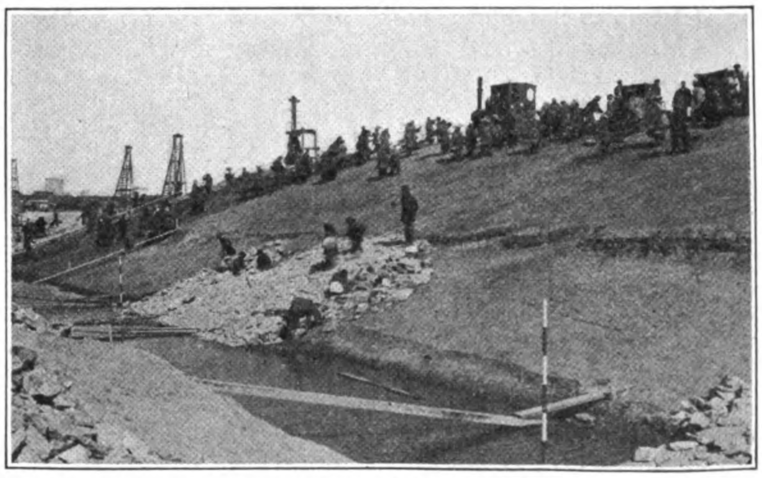
This report gave a description of the general condition of the river and the present protective works in existence against floods, together with such hydrographic and geographic data as was necessary to enable the engineers to work out a scheme for regulation of the floods.

It is interesting to note that the chief engineer of the Whangpoo conservancy board has been attached to the board for more than a year as an honorary member.

East River-Dykes.—Owing to the insufficiency of the funds available, the board has not been in a position to enter upon any of its comprehensive schemes, but has had to limit its activities to works within its power to finance which would give an immediate local relief, but at the same time form a part of the general scheme.

For years the East River has caused inundation of the regions to the North of Sheklung, and an area of some 170 sq. km. (200,000 *mow*) is yearly more or less under water during the rainy season. By closing the creek at Masai with a flood gate a considerable improvement of the flood conditions in the upper part of this region would be expected, though the salvation of whole area calls for more extensive works. In combination with the flood gate the dykes on both sides needed repair ; and the board decided to execute these works during the dry season, 1919 to 1920. For this purpose $260,000 was appropriated. In addition hereto came the closing of a wash out at Siu Pong Kong through which a large region during the last two seasons had been flooded.

Ling-pai Dyke, East River



Dyke Construction at Lupao, North River

The work commenced on December 21st, 1919, and was successfully carried out during the winter months. An unexpected heavy precipitation setting in in the middle of February, caused some inconvenience to the construction of the flood gate, and delayed the work.

During some periods, as many as 12,000 laborers were engaged per day.

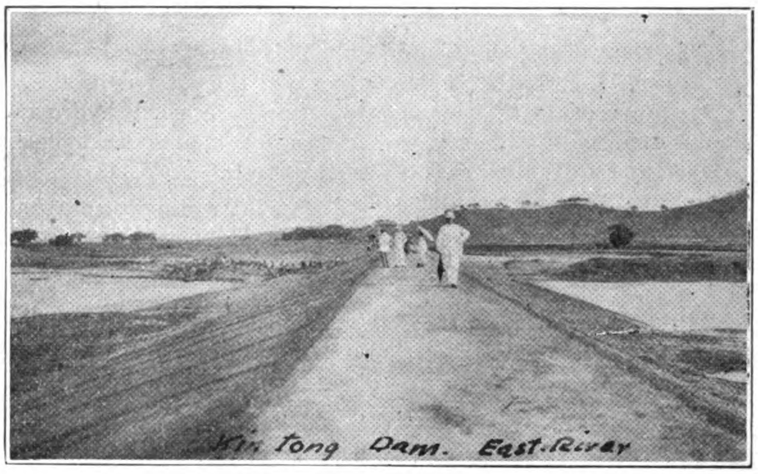
FLOOD GATE AT MASAI.—The structure is an ordinary open sluice gate with abutment made of concrete in proportion 1 cement, 3 sand and 4.5 crushed stone, with about 25 per cent. additional large stone imbedded in the concrete. The wings to protect the adjoining dyke slopes are made of rubble stone, with smooth facing. The following are the dimensions of the gate :—

Free opening between abutments	5.20 m.
Height from sill to top of gate	9.40 m.
Length of chamber	8.50 m.

Doors : Height 9.50 m., width 3.19 m.

The concrete and wings have been completed, but the doors will not be put in before the next dry season. The gate is temporarily closed with wooden shutters.

The full effect of this flood gate will at first be seen when the creek at Hanam and Luklan is permanently closed with a cross-dam.



Kin-tong Dam, East River

NORTH RIVER.—Excepting the repair of a stretch of dyke at Samshui, which work was executed in 1919 by the Samshui custom authorities, but paid for from the conservancy funds, no work has thus far been performed in the North River district. For the next dry season, extensive protection works are contemplated at Lupao, consisting of a dam provided with six Stoney sluices of 10 m. width each, intended to control the flow in the Lupao channel, in connection with the present dyke system.

This should be the first link in the chain that is designed to protect Canton and the large and valuable territory to the north-west of the city from inundation from the North-River floods.

The following extract from the statement of accounts shows the sums expended on the various works during the period covered by the report :—

EAST RIVER WORKS :			Hongkong $
(a) Salaries and Wages			18,948.56
(b) Running Expenses, travelling and transportations			7,628.03
(c) Crib at Masai (uncompleted)			1,306.29
(d) Dykes			200,840.71
(e) Flood Gate, Masai			39,548.76
(f) Other works			660.61
		Total	268,932.96
Cash in hand at Masai	1,326.19		
Cash in bank at Shek-lung	307.85		
		1,634.04	
		Total	270,460.45
NORTH RIVER WORKS :			
1st Installment on the Lupoa Sluice Gates		28,722.55	
Dykes repaired at Samshui ...		3,400.00	
Miscellaneous payments ...		593.20	
		Total	32,715.75

Captain Tsao Yu-ying, director-general of the board of conservancy works of Kwangtung, in an introduction to the report says :—

The execution of this work has been made possible through the generous grant of over one million dollars from the central government, of sixty thousand dollars from the military government, and through the monthly remittances for office upkeep from the treasury of the local government.

These grants—even though small compared with the total required for conservancy works in this province—have given the board an opportunity to start works in different places where local relief could be obtained, and through this the layman has received direct demonstration of the methods we want to employ in our conservancy schemes. It must be remembered, however, that full benefits will be obtained only when the work has been carried on to its completion.

I earnestly hope, therefore, that further grants or a tax levied on the areas in question will put our board in position to continue its conservancy works for the benefit of a large population which, under the prevailing circumstances, is living in constant danger of having fields and houses destroyed by the continually recurring floods.

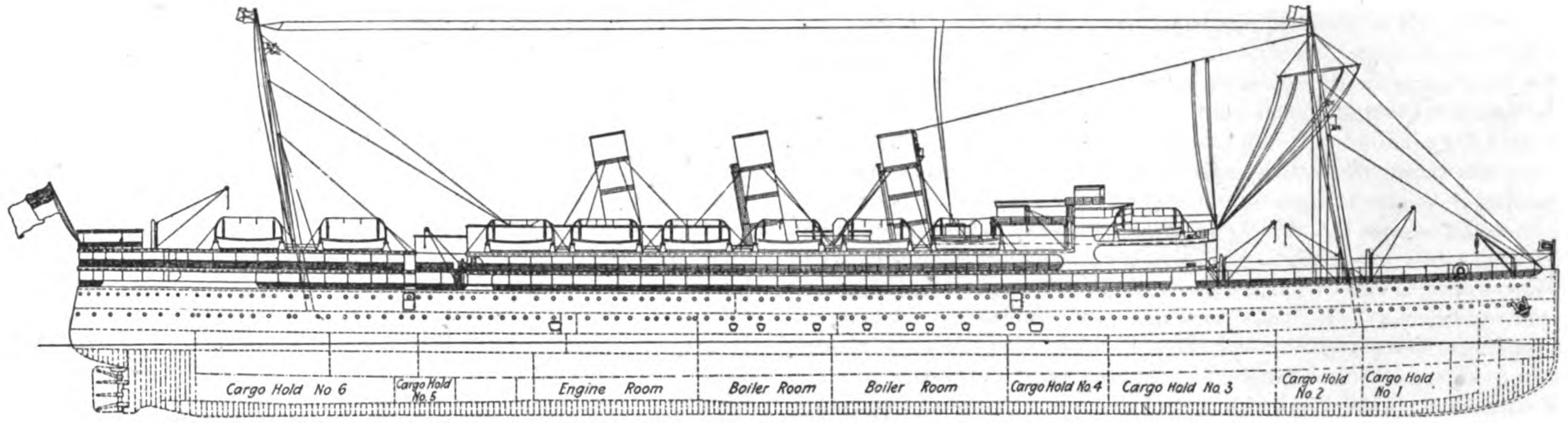
Captain G. W. Olivecrona, the engineer-in-chief, recalls in his report that a preliminary estimate of the cost of putting the West River dykes and flood gates in servicable order was $11,369,000 and that complete regulation of the rivers emptying into the Canton delta in order to prevent them inundating the country would cost in round figures $30,000,000.

To raise this considerable sum a tax on the land which would benefit from the improvements was recommended. It was stated that a yearly fee of 42 cents per *mow* would yield sufficient funds to permit the completion of the whole reconstruction scheme in fifteen years. The provincial assembly failing for some unstated reason to consider a proposal to make the tax suggested a legal obligation, the board was unable for lack of funds to enter upon any form of construction work for the time being." The expenses incurred in surveying had been defrayed from funds appropriated partly by the Flood Relief Funds kept the Cantonese Club at Peking and partly by the local government but these funds were exhausted.

This grant was made through the Canton customs and the commissioner of customs controls the expenditure of this money. In December last the military government contributed the sum of $60,000 towards the cost of the flood preventive works in the East River districts.

The pictures embedded herein give excellent impressions of the work now in hand and it is not difficult to forsee greatly increased prosperity in the neighborhood of Canton when floods become matters only of the past.

When the next group of British naval aviators arrive in Japan in June the Kasumigaura airdrome will be completed and ready for use, if plans of the Japanese naval authorities are carried out, says the *Japan Advertiser*. All capital ships of the navy will be provided with one or two airplanes when the airplane tender *Hosho*, 9,500 tons, is completed at the end of 1922. The model deck and sliding platform of the Kasumigaura naval airdrome are already completed and the first class of Japanese students to be trained there will consist of 20 members. These will be under the instruction of the newly arrived British aviators.



Profile Plan, s.s. *Naldera*

New P. & O. Liner "Naldera"

For India and Australian Service

THE steamship *Naldera*, which was designed and built by Messrs. Caird & Company, Limited, Greenock, Scotland, for the passenger and mail service to India and Australia of the Peninsular & Oriental Steam Navigation Company, is one of the largest and most modern units of the fleet of that company, says *Marine Engineering*. Her keel was laid in 1914, but construction was suspended on account of the war. Two years later work was resumed and she was launched in December, 1917. The vessel was first completed as a cargo carrier in 1918, and afterwards fitted out as a troopship and armed cruiser, but was never used for either of these services. After the conclusion of the armistice she was restored to her owners for completion along the lines originally intended. She was completed early in 1920 and made her maiden voyage in April of that year.

Of the three-stack cruiser stern type, the *Naldera* is designed for a speed of 18½ knots. Five of her decks, viz., the orlop, lower, main, upper and hurricane decks, extend the full length of the ship, while above these are the promenade and boat decks, each of which has a length of 440 feet and projects 2 feet 6 inches beyond the molded breadth of the vessel. This provides additional space for promenades. Expansion joints are provided amidships in these two decks.

Accommodations are provided for first and second-class passengers only. Most of the accommodations are in one, two, three and four berth staterooms, with a few special suites consisting of sitting room, bedroom and bath. All staterooms have lavatories with running water.

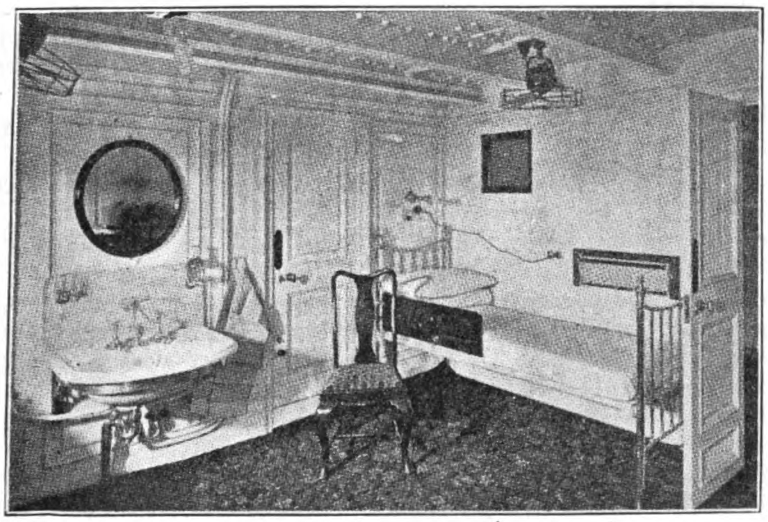
Two electric lifts are provided forward, which operate between the main and promenade decks, with landings at the intermediate decks.

Cargo is carried in four holds forward and two holds aft. Two of the forward holds are fitted for carrying refrigerated cargo. Space is provided aft for mail and baggage. The cargo is handled entirely by hydraulic cranes, the power for which is furnished by a pump and hydraulic accumulator in the engine room.

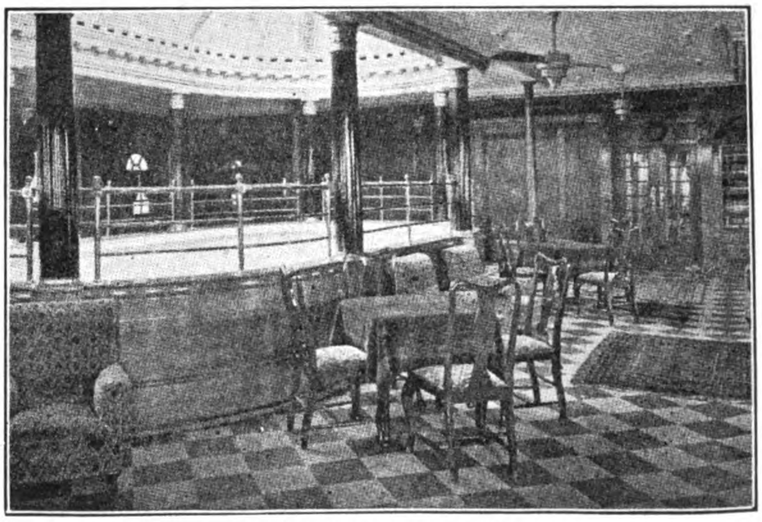
The vessel is driven by two quadruple expansion reciprocating engines. Steam is supplied by ten coal-burning Scotch boilers operating under the Howden system of forced draft. The ashes are discharged through the bottom of the ship by two Stone hydraulic ash expellers. An ash hoist is also provided in each boiler room.

The electric generating plant consists of six compound engines, driving generators having a total output of 280 kilowatts at 105 volts. The electric installation includes some 3,000 lamps and over 800 cabin fans, as well as electrically operated lifts, galley machinery and gymnasium appliances. A 15-kilowatt oil engine driven emergency generating set is fitted on the promenade deck.

The *Naldera* is now operating between England and India and Australia and is giving excellent service. A sister ship, the *Narkunda*, has been completed at the Belfast yard of Harland & Wolff and will also operate between England and the British colonies of the southern hemisphere, carrying passengers, cargo and mail.



First Class Cabin



Music Saloon, looking Aft.

Resuscitated

IT'S a long road that has no turn. The efficient public servants interred by the Wilson administration are being called back to life. President Harding is demonstrating that he has all the elements of greatness, the first qualification for which is the ability to choose the right man for the right place and then depend upon him. All along the line of appointments the rule holds good. In the state department we have the appointment of Mr. H. P. Fletcher, and now comes the equally cheering announcement that another assistant secretary has been found in Fred Morris Dearing. *The New York Tribune*, echoes our views on this appointment in an editorial entitled "Leveling Up." It says; "The nomination of Mr. Fred Morris Dearing to be assistant secretary of state is another illustration of the workings of the new rule of merit and fitness which Secretary Hughes has established for state department appointments. Mr. Dearing has come up from the bottom in the foreign service by virtue of character and preparation. He began as a young man by studying foreign languages and worked for a time as a translator in the postoffice department and the department of agriculture. He took a post-graduate course in jurisprudence and diplomacy at Columbia (now George Washington) University, in Washington. He went to Havana in 1904 as private secretary to the American minister there, and two years later was appointed, after examination, to be second secretary of legation at Havana. Between 1906 and 1911 he served as second secretary at Peking, again at Havana, at London and at Mexico city. For nearly two years he was assistant chief of the division of Latin-American affairs in the state department. Then he became secretary of legation at Brussels, secretary of embassy at Madrid, and later secretary of embassy and counselor of embassy at Petrograd, where he remained until November, 1916.

"Mr. Dearing has, therefore, had a broad experience in the actual work of diplomacy and is a competent observer and adviser. He is the type of man on whom the government must count to build up a permanent and technically trained diplomatic corps. There is more need to-day than ever before for an American foreign service staff which can compete on equal terms with the diplomats of other countries. We have traveled far beyond the stage at which diplomatic posts can safely be passed out to 'deserving democrats,' or to 'deserving republicans.' Fortunately, the state department, under its present management, is taking scrupulous notice of the fact."

Progress Made at Peking Syndicate Collieries

PRESIDING at the annual general meeting of the Peking syndicate on January 31, Col. Brinsley J. H. Fitzgerald, C.B., said: Our agent-general states in his report that:—"Provided the existing market conditions continue, and it is possible to dispose of the large increased production which may shortly be expected, the immediate future of these collieries is very promising. The present output is about 2,300 tons per day, and the developments which we are now in a position to put in hand will win areas of new coal sufficient to maintain it at that figure for a long period ahead. In addition, a considerable production, which I estimate at not less than 1,500 tons per day, will be obtained from our native pit operations at Lifeng when they are in full swing, making the gross out-turn to be disposed of between 3,500 and 4,000 tons per day."

Operations at Lifeng

The results of our operations at Lifeng are very satisfactory, and the outlook there is most favorable, the coal being of good hard nature, containing a large percentage of Yuho, which is the best lump coal. A further area, lying beyond the village of Lifeng, of equal size to the one we are now operating, we propose to develop as soon as our present operations are sufficiently advanced to secure a large output. A loading wharf and stocking ground is now being arranged near the Tao-Ching Railway, and sidings are being laid of sufficient size to enable 2,000 tons of coal to be loaded and despatched daily. As your chairman pointed out at the last meeting, the question of a dividend must wait until after the money expended on the coal mines can be capitalized. As you are aware, the board decided to send our consulting engineer, Mr. Arthur Hassam, out to China last July to visit our mines at Jameisen, to report and advise on our properties, and to assist in getting the best results from the very heavy expenditure which it was necessary to incur. I am glad to say Mr. Hassam has now safely returned, and will be pleased to give you the latest information in regard to our collieries, and his opinion as to future prospects; he will also be pleased to answer any technical questions you may desire to put to him regarding the mines.

Mining Engineer's Optimism

Mr. Hassam said that as he had only returned the previous night he was not in a position to submit a written report, but he had been very much impressed while in China with the prospects and possibilities of the syndicate's properties there. He had spent three months in China, and had gone over the whole of the properties, and discussed everything appertaining to the technical side, with Mr. Kenrick and the staff generally. They had been very much handicapped for some years in not being able to get the necessary machinery for dealing with the very large quantity of water in the Jameisen mines, owing to war conditions, and they had only been able to get the machinery sent out last year. This would affect a very material reduction in the costs, and an increase in the output. Having given details with regard to the progress of the properties, Mr. Hassam said he thought the present situation indicated that they were on the eve of better things, and his impression was very favorable in regard to the future. He expressed his obligation to Mr. Kenrick and the staff in China, who had rendered him every possible assistance. He congratulated the syndicate on having such an excellent and qualified staff to do their work in China. Everything was going quite smoothly, and he believed the syndicate was going to have a more prosperous time.

American Views on China Trade

Numerous factors have combined to induce depressed conditions in the chief Chinese business centres. The financial and industrial difficulties in Japan, largely eliminating that country as a market, were followed by the narrowing of the markets in the United States. Large amounts of native Chinese products have been tied up as a result, and the absorbing power for foreign goods has at the same time necessarily waned. Additional advices state, however, that there are evidences of a change for the better and American houses interested in trade with China should consider the importance of maintaining their relationships so as to be in an advantageous position when business revives.

It is interesting to note that a meeting of Chinese bankers recently held in Shanghai was the first national conference of its kind in the history of China. A subsequent meeting was held at Peking. The first meeting was held to discuss both foreign and internal loans, taxation and the consortium plans; the second to arrange a domestic loan for the purchase of rolling stock for the chief railway lines.

The United States has recently given its approval to a graduated increase in the customs tariff with China, to bring the general rate on imports up to the effective five per cent. contemplated in the Treaty of 1903. This change was in recognition of the need, in view of the reduced purchasing power of money, of an increase in customs receipts to maintain the government.

New Enterprises in Antung

There have been established in Antung a number of new industrial and business enterprises, particularly by the Japanese, whose activity in these lines has continued throughout Manchuria.

In a general sense the tendency among Japanese has been toward promotion of stock companies of various kinds, while among the Chinese there has been great development of individual enterprises.

The Manchurian Mining Explosives Co., a Japanese firm capitalized at $500,000, completed a plant consisting of about 30 buildings, and is now engaged in manufacturing black powder and other explosives which will be sold mostly to mines and quarries in Manchuria and Korea. The plant has an area of 55 acres, employs more than 100 workmen, and uses materials mainly of Chinese origin, although Chile saltpeter, sulphur, cotton threads, fuse and percussion caps are imported from Japan.

The Anto Yoko Waste Silk Spinning Mill, completed recently, is now engaged in spinning silk thread from waste silk.

The Anto Hotel, with rooms in both foreign and Japanese style, also was completed in 1919 and supplies long-needed accommodations for foreign travelers in Antung.

The site of the Yalu Paper Mill (a Japanese concern capitalized at $2,500,000) was surveyed and temporary office buildings erected, preparatory to building the main mill. It is reported that the firm will manufacture 50,000 tons of paper pulp yearly from Yalu timber.

Most of the buildings for the new electric power plant of the South Manchuria Railway were completed and a small part of the machinery installed.

Why Stop at Bagdad?

WHEN Dr. Sun Yat-sen was explaining his 100,000-mile railway scheme to Yuan Shih-kai and his intimates, Liang Shih-yi, head of the Chinese railways, stuck his finger on the map and tracing a line which crossed Tibet and stopped at the Turkestan frontier, asked, "what is this line for"? "That," replied Dr. Sun, "will open up the great gold fields of Tibet and link up with the Russian system in Central Asia." "But why stop there," rejoined Liang, "why not keep going on and end at Constantinople; its just as practicable." After reading the following editorial gem from the *Minneapolis Journal*, the same question comes to us; Why, Oh why, stop at Bagdad?

A Mid-Asian Railroad

The Japanese, it is reported, contemplate the construction of a railroad from their occupied Manchuria through Inner Mongolia, across the desert of Gobi, into Chinese Turkestan, across what was Russian Trans-Caspiania, touching the Caspian Sea, into Mesopotamia, terminating at Bagdad upon the Tigris.

At the Mesopotamian metropolis it would link up with the Constantinople-Bagdad railway, with its extension to the Persian Gulf and along the seacoast into India, and with the line that is certain to be constructed across the Syrian Desert to Palestine and Egypt.

The Japanese conception seems a grandiose one, but it is no more so than Cecil Rhodes' project of a Cape-to-Cairo route, to-day six-sevenths, more or less, actually in operation; or than the Pan-American route through Mexico and Central America, down through the Andean high valleys, to link New Orleans and El Paso with La Paz and Buenos Aires. The Pan-American railway project is on its way to be completed some fine day, perhaps a nearer one than we realize.

The Mid-Asian route the Japanese have in mind geographically takes advantage of that central Continental depression which, with some interruptions, extends from the Caspian to the Gulf of Pechili. Politically it skirts China and Siberia, and follows that ill-defined trough that exists as a sort of nondescript zone between what was the Chinese empire and the Russian autocracy. As the empire and the autocracy are for the nonce, at least, defunct, the Japanese may be taking time by the forelock in staking out a belt to constitute their railroad right of way.

As right of way it does not cross or interfere with the existing Siberian Trans-Continental railway, nor with the forthcoming British Chino-Indian railway, which is certain some day to connect Shanghai and Calcutta by way of the Yangtze Kiang valley and Burma.

Of the three natural trans-Continental Asian routes east and west, the Northern or Siberian, the Southern or Chino-Indian, the Middle, this Japanese projected one, the last furnishes the easiest natural way, although it lies through the least populous and largely arid lands. But time was, perhaps pre-historic, when great transportation between China and the West followed this route.

It is interesting to note, as well, that along this line proceeded the armies of Genghis Khan to the conquest of Persia and the Bagdad Caliphate, and from what was lately Russian Turkestan, Tamerlane, the descendant of Genghis, proceeded to the conquest of India. It is a Japanese legend, believed by every schoolboy, that the Mongol Napoleon, the most extensive conqueror in history, really was a Japanese adventurer who rounded up the Mongolians into armies for the conquest of everything in sight, as the Corsican did the French.—*Minneapolis Minn. Journal*, March 6, 1921.

The above is a photograph of the memorial tablet made by the Shanghai Dock & Engineering Works for Messrs. Jardine, Matheson & Co., Ltd., to be placed in the Hongkong offices of that house to perpetuate the memory of the officers and engineers of the Indo-China Steam Navigation Company who gave their lives for their country in the late war.

AMERICA AND JAPAN

The Swing of the Pendulum

SLOWLY the pendulum is swinging the other way. Talk of war with Japan is giving place to demands for co-operation and harmony. American editors are beginning to see clearly behind the clouds of propaganda raised to obscure the truth. They are becoming tired of the theft of valuable news space to bolster up the cause of this or that foreign nation. They are beginning to ask questions. From many quarters comes the query in some form or other, who is "propagating" the war between America and Japan?" It is a good sign, a healthy American one. The answer may be somewhat obscure to the man sitting in the small, country sanctum, but the editors of our largest newspapers have only to refer to or recall the mass of free matter that has poured in on them from so-called bureaus of public information, free press associations and special writers, to accurately gauge the situation and answer the question. We present herewith editorials from all sections of the country as indicating a new line of thought, a warning to interloping propagandists that their hope of converting the United States into a mad-house vanished on March 4th.

TALK PEACE, NOT WAR

The following syndicate editorial has appeared in many of the smaller newspapers of the United States :—

Let us have an end of this talk about possibilities of war between England and the United States and between the United States and Japan. The United States has lived at peace with Japan ever since there was a United States, and she has lived at peace with England for over a century. There is not one question pending or prospective between this nation and either Britain or Japan which cannot and should not be settled by peaceful negotiation.

It is ridiculous that a nation which professedly wishes to avoid entanglements with foreign nations should be prodded toward disagreements with them instead of toward agreement. There is no possible entanglement so complete and so long drawn out in its results as that of war and its aftermath.

Nobody in the United States wants war with the great sister nations. No rational person in those nations wants war with us. Can we not govern our speech in accordance with the true desire of the people, and consider in friendly fashion the questions pending between us and our neighbors ?

THE MENACE FROM THE DIRECTION OF URGA

THE FAR EASTERN REVIEW is not the only paper that has a right perspective on the Siberian situation. The veteran editor, Mr. C. B. Blethen, who controls the *Seattle Times*, has grasped its proper significance. The opportunities for exact knowledge of what is going on in Siberia are as good, if not better in Seattle, than in Shanghai, as through that port pass nearly all the travelers from Siberia. They are not all agents of Trotsky either.

"The ferment in the Near East, is being duplicated in Siberia, where the Bolsheviki are preparing to contest Japanese control over the seacoast and an extensive stretch of the hinterland.

Russian troops are being moved into the district which would be the base from which operations would be conducted in the event a big drive against the Japanese were attempted during the coming spring and summer.

Recently, this movement has attained considerable proportions, the forces engaged being described as well armed, under iron discipline and prepared for any action that may be ordered by the Moscow authorities, although lacking in clothing and other of the equipment of a modern army.

For the present, at least, another Polish adventure apparently is not contemplated. Perhaps the memory of the crushing defeat they sustained last year is too vivid in the mind of the Bolsheviki. Coupled with this probably is the ambitious plan of the Third Internationale to back up propaganda work in the Orient by a show of force.

Russian policy under the new regime, as under the old, is turning to the East. Its armies are driving upon Persia and Turkey, in the former case because the road to India through Persia is the easiest that any conqueror can follow and in the latter because Turkey is the most disturbed country in the world at this time.

Foreign wars are essential to the continuance of the Red regime. The Slavic masses must be induced to expend their warlike energies abroad in order that they may not become involved in revolution at home. The Bolsheviki undoubtedly are in position to conduct a moderate campaign in Persia and Turkey and, simultaneously, a greater drive against the Japanese in Siberia."—*Seattle Times*, Feb. 23, 1921.

A RACIAL MADHOUSE

Probably the highest American authority on Russia's Asiatic policies is former Senator A. J. Beveridge. His book, written in 1900, on the "Advance of Russia" is worth reading even at this late date. He clearly prophesied much that has taken place since then. He recently uttered a timely warning to the nation, when, in an address on Washington Day, he inveighed against the swarms of foreign propagandists that are creeping all over America. He said:

"Any political association with any foreign government is as foolish as it is unpatriotic. The moment we interfere or even are asked to interfere in foreign political broils or problems we become a racial madhouse. Infinitely more important than any international solidarity is American solidarity."

Commenting on the above speech, the *Albuquerque N. M. Journal* rightly says:

To some, this may appear a selfish doctrine. But any doctrine that has for its aim the welfare of 100,000,000 human souls, after all, is unselfish, if one may indulge in a paradox.

Does not the welfare of the 100,000,000 citizens of the United States count for something ? If we take sides with Korea against Japan, then we shall have to take sides against Britain in favor of Ireland, for the same principle of self-determination is involved.

And suppose that to-morrow Zanzibar, or Madagascar, or the Tierra del Fuego decides that it is being oppressed, how can we consistently refuse to assist it in its "national aspirations ?"

It is precisely this that Senator Beveridge means when he warns against our becoming a "racial madhouse."

We have mentioned this matter before, and will do so again, when the news of the day warrants it, as it warrants now ; for we believe that the greatest danger that faces the United States to-day is that of becoming embroiled in war through the selfish machinations of foreign propagandists, of whatever race, color, or previous condition of servitude they may be.

Yes, this may be a selfish view ; but it is less selfish than the aims of those who would draw a nation of 100,000,000 into strife in order to gain their point.

From the above, it would appear that the larger centres of American thought and population have no monopoly on sound judgement and patriotism. Even in New Mexico, editors are getting wise and are up in arms against professional war-makers, operating through press bureaus whose object is to embroil the United States by appealing to our sympathy and sentiment.

SIBERIA NONE OF OUR AFFAIR

Editorial from *Detroit Free Press*, January 27, 1921

"President Wilson's suggestion in his recent letter to President Hymans, of the League of Nations assembly, that soviet Russia be protected from outside attack is being widely and naturally interpreted as a side slap at Japan. This is because the Japanese operations in Siberia always have come more or less under the presidential frown, though rather inconsistently in view of Mr. Wilson's approval of the Shantung grab.

But why should Mr. Wilson or any other American undertake to object to the development of Japanese hegemony in eastern Siberia ? What business is it of ours ?

Is Siberia a white man's country ? Does the portion bordering on the Pacific coast belong by nature to the Slavs any more than it belongs to the Nipponese ? Has Petrograd or Moscow ever done anything to develop it in a broad way ? Have the Russians any title other than title by conquest and military occupancy? Or is it conceivable that a Japanese administration can be any worse for the native inhabitants than the czarist regime was and the soviet regime is ?

It is certain the Japanese must go somewhere to find an outlet for their energies and for their multiplying population. What place can they find where they will clash with legitimate counter interests less than they will clash in Siberia ? Where can they develop and come less into clash with Caucasian interests ?

If the Japanese go into eastern Siberia and devote their energies to development of that country they are likely to look less longingly at the Philippines, and at Hawaii, and at South America, and at Australia, and at New

Zealand, yes, and at the west coast of the United States. For a time, anyhow, we may expect a relief of the pressure in parts of the world which views them with unsavoring eye.

It is true the Japanese are likely to build up a considerable continental power if they choose to go into Siberia—and it is not yet clear that they will so choose. If in addition to Korea they permanently acquire Vladivostok and some territory to the westward, they will have a strong strategic foothold. But unless they are throttled the Japanese are going to expand. Why not let them expand where the land is open without grudging them a cold and barren area ?

Aside from all this, the Siberian question is distinctly none of our business. To attempt to stop Japan in northeastern Asia is no more our right than to attempt to bolster up Japan's claim in Shantung was our right.

There are plenty of issues between the United States and Japan that cannot be dodged and must be met. They will keep the hands of our diplomats busy. In the name of all that is sensible let us leave things outside our sphere strictly alone.

RINGS TRUE

The *Boston Post* comments as follows on a statement obtained by the *New York World* from the Japanese minister of foreign affairs, as follows :

"Perhaps no truer hope for the world's safety and relief has arisen since the peace of Versailles than in the press campaign for disarmament inaugurated by the *New York World*. The voice of true America speaks once more, recalling storm-tossed humanity to peace and sanity.

No other nation can speak for this great cause with such effect, for no other nation occupies so unique a position.

It is the tragic destiny of a comparatively small but self-reliant nation like Japan to be obliged to watch anxiously the dispositions and measures of nations more fortunately circumstanced and with greater resources at their command. She inaugurates experiments in disarmament in advance of other nations.

The situation is beyond her control, and she can only follow the example of others or co-operate with them. This is welcomed by Japan, for it will not only relieve her of the strain of unequal struggle, but will make possible the realization of her modest desire for a career of peaceful development.

Inasmuch as his majesty, the emperor, is at present indisposed, I do not feel at liberty to request the expression of his personal sentiments on the question of disarmament. But I cannot doubt that, as the representative of a long line of pacific monarchs, his majesty's dearest wishes would be intensely gratified by anything which even promises some relief to the intolerable sufferings and burdens of the civilized world.

If that does not represent Japanese sentiment, nothing can. It is the solemn and well considered declaration of a responsible minister of the empire, said with the full knowledge that it would be taken in all the chancellories of the world as the view of the Japanese government. And it rings true, no matter if the professional Japanese baiters shall say that it is the usual bland utterance of a nation that must not be trusted or even considered honest."

ASK THOMAS F. MILLARD

"WHO IS PROPAGATING THE AMERICAN-JAPANESE WAR" ? : The question is asked by the *Pottsville (Pa.) Journal*. Turn back to your files of August 1919 and refer to your headlines over the story of the first hearing of the Shantung question before the senate committee on foreign relations and dollars to doughnuts it reads, "THIS MEANS WAR"! Ascertain who said it, his antecedents, affiliations, and who is financing him, and you will be able to answer the question to your own satisfaction.

DANGEROUS JINGOISM

Does any American want war with Japan ?

It is not an idle question. Some Americans, most of them in positions of influence, act as if they wanted exactly this.

The United States and Japan have always been friendly. There is no reason why they should not continue friends. Neither wants trouble with the other. Neither, putting the issue on another basis, can afford to have war.

The situation would seem promising enough were it not for the activity of some people who choose to harp continually on small differences of opinion, who preach the dangerous doctrine that Americans and Japanese are drifting inevitably toward a collision, who pretend to see the national horizon darkened by war clouds, all the time piling fuel on every little flame they find and doing their best to make it a conflagration.

This is sheer jingoism and it is fraught with peril. Most Americans—we trust most Japanese—are thinking straight on this question. They need to be on guard against insidious influences which pretend to lead only to delude.

None of this means, certainly, that the United States should abate anything of its determination to maintain a reasonable naval and military preparedness. Quite regardless of Japan, this is no time to surrender to pacifism. It is time, however, to avoid every word or deed tending to magnify differences between nation, to avoid every suggestion of an irritating nature—in short, to cultivate friendships, not invite antagonisms.

Let there be an end of Japanese baiting. Let there be an end of the dangerous habits among a few Americans of reading into every Japanese policy some hidden animosity against this country. Suspicion breeds suspicion. Talking war invites it.

Who among us really wants war with Japan.—From the *Cleveland (Ohio) Plaindealer.*

DESPITE THE MEDICINE MAN

"It would be stupid to disregard the fact that many men, in public as also in private life, look upon our disputes with Japan as containing the seeds of war.

The basis of their uneasiness is the activity of the military party of Japan, the shiftiness of the Japanese diplomacy, the apparently insolvable problem of adjusting the racial antipathies in California, the clash over the mandatory of Yap and the ambitions of the rival American and Japanese naval constructors. . . .

The coming of war marks ever a plain trail. Only the stupid and blind failed to see the "irreconcilable conflict" approaching between the north and the south sixty years ago. The world war was a quarter century in working up to the point of firing the first guns. There are no cleancut signs to-day indicating that America and Japan must, soon or late, proceed to make war medicine."—From the *Detroit (Mich) Journal.*

THE FIRST LAW OF NATURE

Press despatches say that the Japanese are embittered because of the constant interferences on the part of this country in Asiatic affairs.

Other nations are keeping still but America continues to aggravate the Japs. We are protesting over this and that and diplomatically we are fighting them at every turn of the road. England isn't doing it and neither is France. If this policy is continued war is inevitable. It may not come for five years or ten years but it will come.

The Japs are virile and aggressive. They are increasing very rapidly and their islands are not large enough to support them. Either they must overspread into other countries or they must starve.

This country and other countries have shut out the Japs. We tell them they can't come over here and then warn them against acquiring territory in which to turn their increasing millions.

The Japanese are not doing anything we wouldn't do as self-preservation is the strongest law of nations. If this country was overpopulated and we couldn't raise enough to feed ourselves and if Canada was populated by the Chinese and we either had to have Canada or resign ourselves to a policy of race-suicide, do you think we would hesitate about taking over Canada ?"—From the *Greenfield*, IA. *Free Press*, January 27, 1921.

THE PROBLEM !

The Troy (N. Y.) Evening Record says :

"Obviously the logical direction for Japanese expansion is westward—on the Asiatic continent. That really is what has been happening for a quarter of a century and more. It has created the Korean problem. It has challenged Chinese opposition. It will continue to be a source of trouble as long as some definite arrangement is not made whereby Japan may have opportunity to develop Asiatic territory. But Asiatic territory is all taken. That is where the difficulty lies. The Japanese may either be forciby confined within their own legitimate territory, or concessions may be made to them in eastern Asia. As neither of these alternatives is likely to be followed. the solution of the Far Eastern problem is such as to give experienced European American diplomats cause for serious thinking. It is a problem that will loom larger during the next few decades."

JAPANESE EXPANSION !

"Activity of Japanese in America promises to be curtailed in the near future so that the Nipponese will of necessity turn to other lands as desirable breeding places. Facing such conditions we may well expect the Japanese to push farther into Siberia just as Mr. Hammond suggests, at the same time continuing the campaign which Nipponese fondly hope will end in complete control of the Celestial empire. Japan must expand or revert to a nation of the third power, a consummation not at all in line with Nipponese ambitions. —*Hanford Sentinel.*

MR. HUGHES' WISEST COURSE

The Brooklyn Eagle comments upon the fact "that the policy of the present administration does not materially differ with that of the previous administration in the matter of defending America's rights, which means, among other things, that Mr. Hughes will follow up the protests made by President Wilson in the matter of the disposition of mandates and in the surrender of the Island of Yap to Japan." It concludes by saying that :

"It is reported to-day that the navy department is shortly to order the entire fleet to the Pacific. This would be interpreted as a threat to Japan and would create suspicion of our motives everywhere. This is not to be thought of and we refuse to believe that Mr. Hughes has so far misread American sentiment as to think that the country would sanction such a course. He is wise in upholding American rights and in protecting American interests,

but he could not make this nation an international bully without betraying American interests and running counter to the nation's purposes."

Evidently, sensible Mr. Howe of Brooklyn, is not with the war-makers who would hail with joy the dispatch of the entire American fleet to the Pacific in order to impress upon Japan that she must dance to our music.

JINGOES AS THE ENEMY OF WORLD PEACE

Under this caption "*The Compressed Air Magazine*," the house organ of the important Ingersoll-Rand interests, says:

A small number of Americans, comparatively, realize or appreciate the importance of the commerce of the United States with Japan; otherwise they would not listen with credulity to the "loose talk" of a possible conflict between the two countries.

Many of the unnecessary international frictions could be avoided if each nation were to give to others a little more credit for honesty of heart and purpose.

Jingoism is to be condemned, because all nations have suffered from it, including Japan, which like the rest of the world has been misunderstood and misinterpreted. Sometimes ignorance of a foreign country and a tendency to over-estimate the intelligence of the people of another country are responsible for mutual suspicions and misunderstandings.

The American people who are finding fault with Japan are those who have never been there and who are not acquainted with the real feelings and disposition of the Japanese. Americans in Japan who have studied the situation there know that the leaders of Japan are eager for American friendship."

It's a pity that other important American manufacturing interests do not get in touch with and listen to their Japanese representatives. It is not only good common-sense but sound business policy.

THERE ARE OTHER SCRAP BOOKS

The *New York Evening World* is denouncing the sword rattlers. If it had only criticized its Wilsonian oracle for creating issues that Harding has to face, maybe the situation would have been different. However, better late than never. Under the title of "Sword Rattling," it says on March 16:

The Tribune had the entire fleet concentrated on the Pacific Coast. A *Sun* correspondent adds a forecast of an army concentration in the land of the Native Sons. On the authority of an unnamed "high official," the *Sun* correspondent reports:

"The controversy between the United States and Japan over several matters long ago reached the stage where it became necessary for this government to assert itself unmistakably."

Such "loose talking and loose thinking" deserve official notice and speedy denial.

It was by precisely such gestures, such "unmistakable assertions," that Wilhelm of Germany "kept the peace of Europe" by rattling the sword.

In Japan such an irresponsible statement will be used by the Japanese militarists to goad the parliamentary bodies into renewed military activity. It will be used to create fear and suspicion of the United States and to make peaceful settlement by negotiation and agreement more difficult.

Loose talking on "unmistakable assertions" and Japanese-American "controversies" can only embarrass the State Department and make bad blood.

One individual, at least, would view such a concentration with delight. Washington B. Vanderlip is hoping for just such a "demonstration." If the ambitious promoter of Siberian "concessions" could only collect a scrapbook of such comment and irresponsible forecast he might be able to return to Moscow and negotiate new contracts for the exploitation of several hundred thousand more square miles of Siberian territory."

Vanderlip is not the only one who might cash in on a scrapbook filled with these clippings. Other people are being well paid for keeping alive an agitation against Japan and whose continued usefulness depends upon the scrap-book voucher presented as evidence of money earned.

THE REAL MENACE OF JAPAN

If it's not one thing it's another. Just as we have gotten comfortably through a national election, along comes Baron Saito, governor of Korea, and opens up a question that if agitated must have far-reaching results over in America, and other democratic countries. The *Columbus (Ohio) Citizen* sounds the alarum to American institutions in an editorial entitled "Too Dumb to Vote!" It says:

Baron Saito, the Japanese governor of Korea, has opened a fine field for research by his refusal to extend the electoral law to the natives under his charge.

He says the majority of Koreans are mentally incapable of exercising the duties of citizenship.

In other words, they are too dumb to vote.

How dumb must a person be to be denied the ballot? It surprises a citizen of this republic to learn that any man—or woman either—outside a booby hatch, can be termed too dumb to vote.

Here for years we've been voting dummies of every kind and caliber—even dead men in a crisis—and not getting excited about it.

It would be interesting to find out exactly how dumb is a Korean and how much dumber is a dumb Korean than a dumb American politician.

Let's hope the Japanese aren't going to get too fussy and establish a lot of mental standards in the Far East that will stir up all sorts of complications if they creep westward.

American politicians like their constituents dumb and they'll be everlastingly dumbfounded if they're ever anything else.

No wonder the American demagog politicians and propagandists have it in for the Japanese. They are always springing something new to take the joy out of life, and injure their business.

DAVID HARUM'S ADVICE

John Hays Hammond, famous mining engineer and one of the most noted public figures in the United States, favors co-operation by the United States and other nations in the solution of Japan's expansion problem. He has told the foreign affairs committee of the house of representatives that Japan must have outlet for its population and trade. He advocates the acquisition by Japan of a tract in Siberia about the size of California. This tract, he says, is rich in iron and coal, which Japan needs, and is climatically suited for colonization.

Obviously, such a solution of Japan's emigration problem must await stability in Russia. There is at present no Russian government with which an agreement of sale such as proposed by Mr. Hammond could be properly concluded. Later on, circumstances may be such that this proposition can be given consideration.

Japanese expansion in the Far East has been frowned upon in the past by the United States and other powers, but the time has come to consider whether this is not, after all, the right solution of a vexing and dangerous situation.

The United States will not admit Japanese immigrants, now or later. Neither will Canada, Australia, New Zealand or South Africa. Even in Mexico and South America, opposition is beginning to crystalize. Japan is even now badly overcrowded and this condition is growing worse year by year.

The other nations of the world are not Japan's keeper, perhaps, but it is certainly to their own interest to remove an international irritation that might become serious. As "David Harum" said, speaking of horse trades, "It's a good idea to let the other fellow make a profit once in a while."—From the *Wheeling W. V. Interligen'cr.*

TROUBLE MAKERS

George Gleason, Y. M. C. A. secretary of international reputation, speaking at a meeting of the Rotary Club, expressed the sentiments of many Americans when he criticised those newspapers that are forever trying to see preparations for war against the United States on the part of Japan and who continue to stir up trouble between the two countries.

The differences that have arisen are serious enough without being made worse. They are not, however, likely to result in war unless we persistently aggravate them and give Japan just excuse for the war that some of her yellow journalists and yellower statesmen appear to want. There are elements in both countries that talk war on every occasion, but the great bulk of the population in either is opposed to any such folly.

America unquestionably would defeat Japan in any conflict, and so would end forever the aspirations of the Japanese to be dictators of affairs in the Far East, but the conflict would be costly and inexcusable. The world is tired of wars. Another such as we just have had might wreck civilization. Talk of war should be subordinated to discussion of means of preserving peace, and Mr. Gleason makes a very practical suggestion when he says that we can do more in that direction by cultivating international friendships than by any other means. Stirring up hard feeling between us and the Japanese is precisely the opposite of that.—*Harrisburg (Pa.) Telegraph.* March 1, 1921.

ENGLAND, AMERICA, JAPAN

No prudent politician in America or the British empire hates the Japanese. On the contrary, there are many reasons why they admire them; but they do discern that the force of circumstances will compel them to attempt to break through the barrier made round them by the English-speaking peoples, Russia and China. Japan has honestly tried her hardest to solve her problem of over-population by developing manufactures and a system of intensive cultivation of crops, but has failed. She must therefore either artificially check the growth of her population or, like Great Britain, build an empire on the sea at any cost. Will someone suggest another alternate solution of the tragic problem, and thus try to save the world from another cataclysm?

Numerous American writers on foreign policy seek a reunion of some kind with England in order to stave off a Japanese attack. All would welcome that.

But what about the future of Japan ?—From *Justice*, London.

THE YELLOW WORLD'S EXPANSION

Since 1906 Chinese economic invasion of Inner Mongolia, along the whole extended border, has been going forward at the rate of four miles a year, and may be reckoned as having in fourteen years accomplished the turning of pastureland and unoccupied prairie into gardens, for gardening is what Chinese agriculture amounts to, of a zone sixty-four miles broad and a thousand miles long.

The process will in the period of a generation or two eat up Inner Mongolia and commence upon Outer Mongolia. It is operating, too, within the rich Amur Basin, which imperial Russia designed for her peasants' settlement. It will reach northwards as far as the Altai Mountains eventually, and promises to consume the Trans-Baikal territory as far towards the Artic as crops can be made.

For tens of centuries China has been crowded, and has had to the north and west these rich unproductive stretches to be compared to our Dakotas. Their nomad inhabitants were fierce warriors and destructive raiders, and once conquered China, and set up a reigning dynasty in Peking for one hundred and twenty years. But until the year 1906, the Chinese were unable to settle that inviting and nearby Mongolian border.

In 1905 Japan drove Russia from Southern Manchuria, and herself assumed actual suzerainty over Inner Mongolia. Under the protection thereby afforded Chinese settlers, skilled farmers from Shantung province, swarmed over the border, and successive waves of them have been doing so ever since.

The defeat and withdrawal of Russia in 1905 have been followed by the downfall of the czars, the civil war in Siberia, the farther usurpations of Japan is in Eastern Siberia in several places to-day, and is there most likely to stay in some form or other. Anyhow it looks as if all that vast and fertile Amur Basin, which seemed dedicated to white settlement, were now to be appropriated by the yellow race.

In a manner Russia's defeat at Liaoyang and Mukden, was the victory of the yellow race over the white, and it was a consequence of division in the white race. A farther consequence of further division in the white race, the war started by Germany, has confirmed the occupation, if not the title, of all that vast and valuable region to the yellow race. It looks now as if the whole virgin territory, rich in forests, minerals and potentially in agriculture, the whole area east of Lake Baikal, a veritable "Inland Empire," were lost to the white race and consigned to the yellow.

This present generation has witnessed a twenty-year period of expensive and deleterious and, finally, slaughterous wars among the nations of Christendom, whereas in the same period the yellow race has increased its hordes, extended its domains and augmented its power. The very China, which seemed moribund, and is politically bankrupt, possesses such inherent racial vitality that her people are to-day achieving the economic penetration and conquest of the Mongolias, Manchuria and the Amur Valley.

White civilization, that of Europe and America, which has been so self-confident, so resourceful, so successful, has receded before the yellow civilization by immense reaches, and is in danger of receding more. White civilization, possibly, can only regain its prestige and maintain its supremacy by consolidation of its powers. Yet, oblivious to a peril perhaps more momentous than any hitherto, the white peoples, we Americans not excepted, go on contemplating as possibilities, and hence increasing their probabilities, further destructive conflicts whose benefit solely can accrue to Asiatics.—*Minneapolis (Minn) Journal*, February 20, 1921.

Hoover on Russian Trade

THE following statement has been issued by Herbert Hoover, secretary of commerce :

The question of trade with Russia is far more a political question than an economic one so long as Russia is in control of the bolsheviki. Under their economic system, no matter how much they moderate it in name, there can be no real return to production in Russia ; and therefore, Russia will have no considerable commodities to export and, consequently, no great ability to obtain imports.

There are no export commodities in Russia to-day worth consideration except gold, platinum, and jewelry in the hands of the bolshevist government. The people are starving, cold, underclad. If they had any consumable commodities they would have used them long since.

No better indication of the destruction of production under the bolshevist system exists than in the case of flax. Pre-war Russia produced 500,000 tons of flax per annum and the country consumed 120,000 tons. The production in 1920 was about 40,000 tons—with mills and lands at least capable of spinning 120,000 tons and the population underclad. In any event, no consequential export flax is available, nor ever will be available, under this economic system.

Nor can trade with Russia under a government that repudiates private property be based on credit. Thus the whole question from a trade point of view develops into furnishing commodities equal to the gold, platinum and jewelry, variously estimated from $60,000,000 to $200,000,000, in the hands of the bolshevist government ; and after that has been expended there can be little expectation of continued trade. There has been no prohibition on trade for a long time so far as exchange of commodities is concerned. Trade is open through the Baltic States, and Italy has been trading in the South. The real blockade has been the failure of the Russians to produce anything except gold and platinum to trade with.

There has been but little trade for gold because its title has been called into question by the French government and by threats of private actions in the courts on the ground that it is stolen or subject to foreign lines. It is apparently the intention under the British trade agreement to allow this matter to be threshed out, so far as England is concerned, in the British courts. The terms of the German agreement in this particular are unknown. If any one European nation accepts the gold, no doubt all of them will.

Europe cannot recover its economic stability until Russia returns to production. Trading for this parcel of gold would not effect this remedy—nor would the goods obtained by the bolsheviki in return for it restore their production. That requires the abandonment of their present economic system.

Fire Extinguishing Without Firemen

To extinguish a fire without the aid of a fire brigade is a feat which, but a few years ago, would have received incredulous response when stated by an informer to be an accomplished fact. In the present age nothing is too marvellous for acceptance, if not as a fact, at least as something highly probable. And now there is something which does the work of a fireman. Its successful operation in 25,000 fires with an average loss to insurance companies through fire and water of about £60 has given it increasing prestige during the last twenty years ; and if its installation continues with equal rapidity, it might not be too hazardous to visualize a period wherein the bell clanging motor fire brigade will be unrepresented. This is how it is done :—

Should a fire break out in any part of a protected building, the heat at once rises to the ceiling, where the temperature is very soon raised sufficiently to melt the solder (which fuses at 155 deg. Fahr. or at a higher degree where the average temperature of the room to be protected requires it) ; the elastic valve in the sprinkler is thus released, and the water is discharged profusely over the fire. Its name is the Grinnell and Messrs. Mather & Platt, Ltd., bring it into being.

Baron K. Sumitomo, the proprietor of Sumitomo Yoko, has established a limited partnership called Sumitomo Goshi-Kaisha, and, therefore, the Sumitomo Yoko, Shanghai, have changed its name to Sumitomo Goshi-Kaisha, Shanghai, which has duly succeeded to all the rights and obligations of the Sumitomo Yoko.

FAR EASTERN IRON AND STEEL

STEEL WORKS MERGER, JAPAN.—The Oriental Steel Works at its last meeting of shareholders discussed the proposal to place the company's plant under the control of the government steel works unconditionally.

* * *

THE NIHON KOKU STEEL MANUFACTURING CO. has been organized with offices at 26 Nakanocho, Kita-ku, Osaka, to manufacture iron poles for bridges and tramlines, etc.

* * *

THE HAKEDA STEEL WORKS was organized recently for the manufacture of machines and tools. Office at 101 Ikibashi, Osaka, Tokyo.

* * *

THE FIRM AIFUJI & CO., 11 Itchome, Okazaki-cho, Tokyo, has been established for the sale of iron and other metals.

* * *

IRON WORKS AT HUPEH.—A proposal has been made for raising $5,000,000 by soliciting shares for this amount as the capital required to open the iron mine at Hsiangpishan, Hupeh, and to establish an iron foundry close to the mine.

* * *

THE TOKYO KOGYO COMPANY was organized recently with office at 37 Shinbori, Shiba-ku, Tokyo, to manufacture steel.

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FRENCH TRAINING CHINESE.—Mr. Chen Lu, the Chinese minister to France, after visiting Lyons Fair, visited the great steel-works and foundries at St. Chamond, where about fifty young Chinese mechanical engineers are being trained.

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ORIENTAL STEEL WORKS, JAPAN.—The president of the company has proposed to place the company's plants under the control of the government steel works for one year, beginning April 16, unconditionally. To explain why this extraordinary step was to be taken the president gave a detailed account of the company's present condition. This proposal was approved by the meeting and the court of directors was authorized to sign the agreement with the government steel works.

* * *

TAYEH IRON MINES.—At the request of the Sino-Japanese Han-yeh-ping Iron & Steel Corporation, General Wong Chan-yuan of Hupeh, has sent a telegraphic report to the Peking government concerning the erection of new furnaces at the Tayeh iron mines. General Wong says that the new foundry at Tayeh has now been completed so that its iron can be exported to Japan and other foreign countries for sale in the same way as the Han-yeh-ping product. Hence General Wong suggests the exemption of the payment of provincial taxes for five years for Tayeh iron.

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AMERICAN IRON WORKS, SIBERIA (?).—An iron works under American capital will shortly be opened near Karimskaya Station, says a report from Harbin.

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JAPANESE MINERAL RESOURCES.—Some time ago the Japanese government constituted a committee to study the future development of the mineral production of the country. This committee has now reported, and estimates that in 1924 Japan will produce 492,000 tons of iron, 1,287,000 tons of steel, 7,773,000 tons of coal and 4,786,000 tons of iron ore. The committee considers that the best policy to follow is the grouping of the various works, and the levying of protective duties, ranging from 10 per cent. *ad valorem* on iron ore to 15 per cent. for steel, material for ship construction remaining free as at present. The builders of ships using native steel would receive a subsidy equivalent to the import duty. Other proposals are that the government should utilize as far as possible native iron and steel; that the government, where necessary, should give special facilities for the transport of material used in the manufacture of steel; that the regulations governing the electric manufacture of steel should be revised to the advantage of the industry; that the government should afford financial support to the steel industry; that mechanical equipment and scientific education should be developed; and that the Japanese steel works erected in Manchuria should enjoy advantages similar to those enjoyed by the indigenous industry.

JAPANESE GOVERNMENT STEEL WORKS.—The government iron foundry, at Yawata, has been forced to reduce its standard prices on all products, but present quotations are not down to the level of the market. The reductions do not, therefore, produce a noticeable effect on either sales or consumption. This foundry now has stocks on hand of about 70,000 tons for military and naval purposes and 300,000 tons for commercial use. In view of this large stock and the fact that the government was asked to advance Y. 300,000 as a relief measure, it is feared by some of the independent dealers that the government's stocks will be sacrificed. This view is not generally considered probable. The Kure Naval Arsenal made contracts during the month of January for a total of 5,000 tons of British pig iron. The entire amount was supplied by three Japanese companies, who furnished the material in the following quantities and prices: 1,500 tons at Y. 155 per ton; 1,000 tons at Y. 156.09; and 2,500 tons at Y. 157.87.

* * *

SHIPBUILDING, HONGKONG.—The economic resources committee's report on the shipbuilding industry goes to prove that Hongkong is capable of building any type of merchant ship as cheaply as, and possibly cheaper than, any other country, Japan included. If a supply of coal from near-by provinces can be guaranteed, the question of the establishment of rolling-mills is purely a matter of time, adds the report.

* * *

NEW BLAST FURNACE.—The installation of a new furnace at the Hankow plant of the Yangtsze Engineering Works has been completed.

* * *

THE IRON, STEEL AND SHIPBUILDING IN JAPAN.—The recent report of the financial and economic committee appointed by the Japanese government gives the following forecast of the production for the years mentioned, and of the coal and iron ore required under peace conditions :—

Estimatel Iron and Steel Production.

	Pig-iron. Tons.	Steel. Tons.
1920	377,616	1,031,550
1921	468,000	1,099,000
1922	437,000	1,164,000
1923	466,000	1,227,000
1924	492,000	1,287,000

Coal and Iron Ore Required.

	Coal. Tons.	Iron Ore Tons.
1920	6,040,000	3,709,000
1921	6,473,000	3,978,000
1922	6,926,000	4,275,000
1923	7,339,000	4,517,000
1924	7,733,000	4,786,000

Previous official figures taken from the report of the economic investigation committee created at the time of the Okuma ministry gave the annual production of pig-iron for 1920 and 1921 at 100,000 tons for Korea, 230,000 tons for Manchuria, and 480,000 tons for China. For steel the figures for Manchuria and China were 120,000 and 60,000 tons respectively.

The current report previously referred to states that the best means of developing the iron industry would be the amalgamation of all the groups of works concerned, and that protective duties are necessary for safeguarding the industry.

With regard to the shipbuilding industry, the committee recommend that it should be supported for reasons of national defence and of economic and industrial necessity, and their proposals take the following form :—In view of the great development which has taken place in shipbuilding since the outbreak of the war, the direct protection provided by the law concerning the promotion of shipbuilding is no longer advisable; and the grant of subsidies for increasing the sale of ships to other countries is also considered to be no longer necessary. The import duties on steel and wood required for the construction or repair of ships must be abolished in order to facilitate the acquisition of such materials by shipbuilders, and thus strengthen their position in relation to foreign shipbuilders. Exemptions from duties are also to be made on imports of equipment, fittings, machinery, etc., which can only be produced with difficulty in Japan. Shipbuilding itself to be further promoted, should the occasion arise, by the payment of subsidies. The import duties on ships built abroad and sold to Japan must remain in force. Facilities should be provided for the grant of long-term loans and for rendering available the necessary amounts for increasing the subsidies paid. The organization of a special experimental establishment for shipbuilding is considered indispensable.

The South Manchurian Railway has under contemplation a scheme for the production of iron and steel on a large scale, in addition to the pig-iron which it manufactures already. The company's daily output of pig-iron amounts to some 300 tons, and the accumulated stock to about 50,000 tons.

Engineering, Financial, Industrial and Commercial News

AVIATION

High Cost of Flying.—The Paris correspondent of a London financial paper states that China is to place a loan for 500,000,000 f. at 8 per cent. in Paris. Three-fifths of the total (300,000,000 f.) is to remain in France in payment for aviation material.

Aviation School, Japan.—A new aviation school is being established at the Amihara aviation ground, Kasumi Lake, Iboraki prefecture, at which the twenty new British aerial instructors will commence their work.

Hydro-planes on Upper Yangtze.—A scheme is being launched to start a hydro-plane service between Ichang and Szechuan ports.

Some time ago a hydro-plane was tried at Nantao by a returned student from France, who will use the same machine in an attempt to make a flight on the Yangtze River between Ichang and Chengtu. The machine is a French 1916 type, and is capable of flying 140 li an hour or from Ichang to Chungking in ten hours. Thirty passengers and mails can be carried on each trip, the expense of which will about $700. Each passenger will be charged $60 per trip and this together with mail carrying fee is expected to bring in profits which will in a short time repay the cost of the machine, $30,000.

Should the scheme prove to be successful, it will greatly facilitate traffic and other communications between Ichang and towns in the interior of Szechuan, and will prove a great convenience on everybody concerned.

Long Distance Flight in China.—With the aquiescence of the Chinese government, the war Office has decided to carry out in early May a long-distance flight between Tokio and Changchun, covering the distance of 1,600 miles.

Trans-Pacific Flight.—The proposed trans-Pacific aerial flight contemplated by the American naval office, which is attracting great attention in the world, will be carried into effect during the coming summer. Twenty-three large machines will be used. It is understood that the American naval authorities will place eight torpedo-depot ships on the ocean, one every hundred miles, to look after the safety of the aviators. The 23 aeroplanes will start together, and proceed to Hawaii first.

Passenger Flights, Peking.—Under the auspices of the bureau of commercial aviation of the air department, air touring over Peking has been inaugurated. The planes used are the ten-passenger commercial vimy, piloted by Major Patterson, an extra charge will be demanded for the privilege of riding in the cockpit with the pilot. Twenty dollars is the price for a ride over Peking lasting about a half-an-hour, while only half as much is asked for local flights. Five dollars is the amount that must be paid for the pleasure of riding beside the pilot.

The Nanyuan aerodrome, which has been especially fitted up for the purpose of commercial flying, is some six miles to the south of the Yuen Ding Men. There is a rough road to the field, and there is now a restaurant for the refreshment of the passengers.

Flights take place three times a week, on Tuesday, Thursday and Saturday, with three flights a day. The flying begin at 2 p.m., with three flights at intervals of half an hour, the Peking trips beginning at two and two thirty, and the local trip at three.

British Aviation Experts to Japan.—At the invitation of the Japanese government Mr. Oswald Short, the pioneer airman, has left England for Japan, and a number of *employes* of Messrs. Short Bros., seapleane builders, have also left for Japan to assist in carrying out a contract with the Japanese government. They are travelling with a large cargo of seaplanes. Further, some ten British civilian pilots and aeronautical engineers, headed by colonel the master of Sempill, will leave in about two months for Japan to instruct Japanese Navy pilots and engineers.

Aviation School, Amoy.—It is reported that several Chinese overseas are planning with certain American capitalists to found an aviation school at Amoy, Fukien, to train Chinese mechanics. Foreign instructors will be engaged.

The first Airship for Japan.—Airship ordered by the Japanese navy arrived from England in April. It is equipped with two motors and can make a speed of 60 miles per hour carrying five passengers.

AUTOMOBILES

Proposed Motor-bus Services, Kowloon.—The Vehicles and Traffic Regulation Ordinance of Kowloon contemplate a service of not less than 15 motor vehicles, each having a carrying capacity of 19 adult persons, including the driver and conductor—two front rows to be reserved for first class, and the remainder for second class passengers. Four routes are specified: (1) Kowloon Ferry to Shamsuipo; (2) Hunghom to Kowloon Ferry; (3) Hunghom to Shamsuipo; (4) Hunghom to Kowloon city.

Nakaya Automobile Company of Shikoku, Japan, recently inaugurated a new service between Ikeda and Kawanoye to connect with the main line railway trains.

BRIDGES

Bridge Construction at Hakone.—In the reconstruction of the Sakawa bridge at Hakone Y.238,000 will be expended.

New Bridges, Tokyo.—A scheme at an estimated cost of Y.1,400,000 is planned by the municipality of Tokyo for the construction of a thousand bridges. Three hundred of the bridges now of wood are to be replaced by iron-framed structures.

Arakawa River Bridge.—A bridge is being built over the Arakawa River on the Tokyo-Marita Tram line at a cost of Y.600,000.

Hangchow-Ningpo Railway Bridge.—The German firm, Diederichsen & Jebsen, had a contract with the Shanghai-Hangchow-Ningpo Railway for the construction of a bridge at the Tsao-o-kiang River. It is now decided by the railway authorities to cancel the contract owing to its non-fulfilment in consequence of the war and the contract will be taken by a British firm.

BUILDINGS

Tokyo Woman's University, presided over by Dr. Niitobe is receiving funds from the United States for the erection of a new building. Y.1,200,000 has been donated to date and land near Enokashira has been purchased for Y.250,000. Building will be commenced this autumn.

New Housing Scheme, Osaka.—One million yen have been borrowed from Osaka city authorities by the Kitaminato Land Co. for the purpose of erecting 445 new houses in the neighborhood of Seiseh-ji River, Osaka. Y.1,300,000 will also be spent on building 650 houses at Suginami Mura.

New Scientific Laboratory to be built at a cost of Y.1,000,000, has been decided by a group of Tokyo professors.

New Schools, Japan.—A new girls' school will be built in Osaka during this year at a cost of Y.218,487. The sum of Y.13,500 will be expended in enlarging the Wakanoura School building.

New Engineering College, Tokyo.—A new building on which Y.1,500,000 will be expended will be erected by the Tokyo imperial university in which to train and produce engineers.

New Hotel, Tokyo.—The Toyo Kisen Kaisha plans to erect a large hotel in front of the central station at Tokyo. Y.10,000,000 will be appropriated for the purpose.

New Building, Osaka.—The Osaka communication bureau will construct a new building at Itchome, Tamai-cho, Kita-ku, Osaka.

New Band Stand, Yokohama.—An expenditure of Y.70,000 has been decided upon by officials and leading citizens of Yokohama for the construction of a new band stand for the Yokohama Park. A concert given a week ago under the auspices of the newly organized musical society netted more than Y.3,500 for the new enterprise.

Tokyo Peace Exhibition to be held in Tokyo during March of next year, will be the largest exhibition of its kind ever held in Japan, according to the plans now being formed under the direction of Dr. Sano, who is in charge of the construction of the buildings.

The exhibition grounds will cover two blocks. The first of these covers 50,000 *tsubo,* which will include halls for educational, agricultural, electrical, forestry, chemical, industrial, dyeing, fine arts and botanical exhibits. The entrance will be through a large decorated arch, 120-ft. high.

The second block covers 60,000 *tsubo,* with the Shinobazu pond as the centre. The Colony Hall, bandstand, halls for foreign products provisions, aquatic products, stock breeding, horticultural, mechanic, aviation and communication exhibits will fill the ground. The pond will be beautified with electric lamps and poles.

Special cable cars will connect the two blocks of the exposition grounds.

Central Railway Station, Peking.—A central union railway station is to be built in Peking at a total cost of $3,000,000, under the direction of the engineer-in-chief of the Peking-Hankow Railway. It will be located on a site east of the Temple of Heaven. When built there will be through connection between Hankow and all Chinese railway stations in the north.

Provincial Exhibition, Nanking.—For the purpose of arousing public interest in industry the provincial government of Kiangsu is preparing to hold an exhibition in Nanking of the commercial products of the sixty districts of Kiangsu on the 10th of October, 1921.—*Chinese press report.*

CONSTRUCTION

Yawada & Co.—Construction engineers have established offices at 12 Nichome, Hama-cho, Nihonbashi-ku, Tokyo.

Railway Wharf, Hanyang.—The Peking-Hankow Railway proposes to build a wharf at Hanyang.

The Hanyang arsenal has lodged a protest as the wharf will affect the tide and cause damage to the property of the arsenal.

The Shinsei-Gumi was organized recently with office at 21 Honga, Nakano-machi, Tokyo-fu, as construction engineers.

The One-Gumi has been established at 18 Sanchome, Senju Machi, Tokyo, for the purpose of engaging in construction work.

Mew Lighthouses, Japan.—A new lighthouse will be constructed at Kojima, Toshima province, at a cost of Y. 125,000 and another at Bono Misaki in Satsuma province at a cost of Y. 68,000.

COMMERCIAL FINANCE

Vladivostok Timber Concessions.—Mr. Kojevnikoff, vice-minister of foreign affairs, is negotiating a contract with a group of Vladivostok merchants for the timber concessions south of the Imperial Wharf, covering an area of approximately 1,000,000 desatinas (3,000,000 acres).

The Cotton Yarn and Cloth Exchange, Shanghai, established lately by Chinese merchants, has increased its capital from $2,500,000 to $3,000,000.

Commercial and Industrial Bank of Italy.—Branch was opened in the Italian concession, Tientsin, recently. The bank's head office is at Rome, with Signor Garibaldi as director. Branches are expected to be shortly established in the British concession, Tientsin, and at Peking. It is said that on the day of opening a sum of over Tls. 200,000 was deposited.

T. K. K. Debentures.—The Toyo Kisen Kaisha has decided to issue more debentures as underwritten by the Yasuda Bank soon to the extent of Y. 7,000,000. The new issue carries interest of 8 per cent. per annum, but it is offered at par. The new issue will be refunded in three years, beginning 1923.

Pawn Shop Bank, Hangchow.—A bank capitalized at $1,000,000 with head office at Hangchow and branches at Kashing and Huchow is being organized by the pawnshop keepers of Hangchow, Kashing and Huchow. The bank will be opened as soon as three-tenths of the total capital is collected.

Commercial Silk Bank, Shanghai.—A bank is being organized by the silk manufacturers of Kiangsu and Chekiang. Mr. Y. S. King and several others, at Shanghai, with branches at Hangchow, Kashing and Huchow, with a capital of $2,000,000, to be divided into 20,000 shares at $100 each. This bank will transact a banking business within the scope of the silk trade.

Branch of Weihai Industrial Bank.—The Weihai Industrial Bank of Nantungchow, established by Mr. Chang Chien in 1920, having a total capital of $1,000,000, has up to the present, four branches located at Shanghai, Tongsha, Tungker and Yanchow. The fifth branch was opened at Haimen on April 24, 1921. The organization of branches at Chinkiang, Soochow, Yienchen and Hsukao is also under way.

A New Bank in Shanghai.—On April 21, 1921, an industrial bank, capitalized at $500,000 named Ho Hai Industrial Bank, or Shanghai Industrial Bank, was inaugurated at Shanghai.

New Banks at Soochow.—Besides the banks already existing here, one new bank has been lately established and four more are under organization.—*Chinese Press Report.*

Agricultural and Labor Bank, Hangchow.—The Agricultural and Labor Bank of Hangchow started business as a joint enterprise of officials and merchants, with a capital of $200,000 to be subscribed by officials and merchants in equal shares. At the last conference of the shareholders, a decision was reached to run the bank solely upon the capitalization and under the management of merchants. Sanction has been granted by the provincial government of Chekiang.

Amalgamation of Companies, Japan.—The amalgamation of companies has been very frequent in Japan of late. The Tokyo Muslin Company held at its offices an extraordinary general meeting of shareholders on March 23, when a decision was unanimously reached to amalgamate with the Tokyo Calico Company. The capital of the company after amalgamation amounts to 15 million yen, ten million yen of which being paid-up.

The Kinugawa Hydraulic Company has also amalgamated with its sister company, Kinugawa Kogyo Kaisha (the Kinu River Industrial Company). The capital of the amalgamated company is 45 million yen.

Chinese Banks' Profits.—The native banks in Peking did an excellent business last year, some making net profits that exceeded their capital. The greater part of their investments was government short term loans. It is because the banks have been doing so profitable a business that so many new banking institutions have been established in the last few months, for the rate of interest charged the government varies between 15 and 30 per cent. The following speaks for itself:—

Name of Bank	Net Profit	Paid to Members for $1.00
Tunglu	$ 750,000	$6.50
Hsinhua Savings	700,000	2.60
Talu	450,000	2.80
Hsinheng	650,000	2.70
Wuchu (Five races) ...	150,000	1.50
Tasung	250,000	2.80
Nengkung	150,000	2.50
Minghua	250,000	2.80
Chihchung	150,000	1.30
Paoshang	200,000	1.70
Yenyeh (Salt)	1,300,000	4.50
China	4,500,000	—
Communications	2,500,000	—

In the case of the last two banks the amount to be paid to members awaits the decision of the shareholders.

Not one of the banks operated at a loss. Each member of the staff received a bonus of one-third of his annual salary at least and in the case of the Tunglu bank, which paid the biggest, a clerk or cashier drawing $1,200 a year got $7,800 additional at the end of the year.

The Li Chung Company.—When Messrs. Tsao Ju-lin and Lu Chung-yu resigned, it is reported that Japanese capitalists negotiated with them for the organization of a Sino-Japanese Trading Corporation with a capital of $5,000,000, to be called the Li Chung Company. Messrs. Tsao and Lu were to subscribe a sum of $2,500,000, and control the enterprise, but on account of some disagreement, there was a deadlock. After the fall of the Anfu party, some of the prominent Anfuists opened negotiations with the above Japanese capitalists again. There was a deposit of $200,000 in a certain bank, and these Anfuists decided to cash it for capital to start the enterprise. But to their surprise they were informed by this bank that the amount was confiscated. Accordingly they failed, and since then the Japanese capitalists have again approached another party of Chinese for the promotion of the same enterprise. Finally they have succeeded in getting men of various parties interested in the matter, hence the present organization of the Li Chung Company. Through the compradore of Messrs. Mitsui & Co., Mr. Li, the Li Chung Company is doing good business in the capital. The date for the repayment of the government printing and engraving bureau loan, wireless telegraph loan, etc., is due, and Mr. Li has introduced officials to this new Sino-Japanese corporation. Efforts are also being made to secure orders for this corporation to purchase locomotives and other railway supplies for the government.—*"New Society"*

ELECTRICAL

The Fuji Water Power Company has decided to float a new loan to the extent of Y.5,000,000. It is expected that it will be underwritten by a subsidiary of the Yasuda Bank.

Electrical Combine, Japan.—A big company formed by the amalgamation of the Hiroshima Electric Light Company and the Kure Electric Power Co., will probably operate with a capital of Y.25,000,000.

The Amagasaki Electric Manufacturing Co. was established recently to produce electrical machines and tools. Office at 22 Umemoto-cho Nishi-ku, Osaka.

Pootung Electric Light.—The Pootung Electric Supply Co. has nearly completed installing its second plant. The main line, from Tungkadoo northward to Yangking village, covers a distance of about eight miles.

Negotiations for installations or connections are also being carried on with many large factories and wharves in Pootung.

At the recent shareholders' meeting, Mr. S. H. Dong, general manager, moved a resolution to increase the capital by $100,000 for extension purposes, which was duly passed.

The Nochi Electric Company, with a capital of Y.3,000,000, expects to generate large electrical power. Its horse power capacity will be 5,548 and electric power 3,400 kilowats.

New Electrical Company, Japan.—Hirano & Co. was organized recently at 60 Sanchome, Kyabashi, Higashi-ku, Osaka, for sale and manufacture of electrical supplies.

Electric Lights Installed.—Almost all cities and towns in Japan have now electric light installed and the city of Tokyo has 2,617,886 lamps installed, the average candle-power being 14.4. Osaka comes next in order, the lamps installed numbering 1,520,641 and the average candle-power 16.9. Saghalein has 12,883 lamps installed, the number being the smallest as compared with other prefectures. As to the average candle-power, Formosa stands first in the list, Osaka, Kyoto, Saghalein, Fukuoka, Tokyo, and Kumamoto coming next in order. The following are the number of electric lights installed and the average candle-power in some leading prefectures:—

	No. of lamps installed	Average candle-power
Tokyo	2,617,886	14.4
Osaka	1,520,641	16.9
Fukuoka	659,887	14.7
Kyoto	565,174	15.5
Kumamoto ...	245,215	14.3
Formosa	205,921	19.5
Saghalein	12,883	15.1

Omsk Electricity Works.—The Omsk provincial executive committee has organized a subcommittee to take charge of electrification of the province. The immediate program of the subcommittee is to utilize the small electric stations.

Pukow Electric Project.—The Tientsin-Pukow Railway has decided to instal an electrical plant at a cost of $900,000 at Pukow.

It was at first intended to put up the plant at Pu Chen, one station to the north of Pukow, where is situated a big railway work-shop which has recently been enlarged. Later it was considered inadvisable to instal it at Pu Chen in view of insufficiency of water-supply.

The ministry of communications has approved the suggestion of the Tientsin-Pukow Railway administration to have the plant built at Pukow where there is ample water-supply and to have the current transmitted to Pu Chen by 6,600 volts wire.

The plant will be completely installed in two years' time and it will have a maximum power of 3,000 K.W. Before its completion, one 1,000-K.W. steam turbine will be purchased to supply current for the immediate need of the Pu Chen workshop and another steam engine of 200 K.W. for lighting the town and the station at Pukow.

The cost of the whole plant is estimated at $900,000 which will be provided in two equal portions in the administration's budget for the coming two years.

(The contract for this plant was recently placed through Jardine, Matheson & Co., with the English Electric Company, Ltd.—Ed.)

Hangchow Electric Light Co.—The profits of the Da Yu Li Electicr Light Co., Hangchow.

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IRVING NATIONAL BANK

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for 1920 amount to $525,746, showing an increase of $127,000, as compared with the figure for 1919, and indicating a net profit of $228,539.

Hydro Electric Plant, Peking.—A Peking merchant, Mr. Yu, is planning to form a company in Peking to supply electricity for the consumption of Peking and Tientsin by utilizing the water power of the Yungting River at Wounping and Weilai.

Electric Light, Kaoyue.—An electric light company is being organized by local wealthy merchants, Mr. K. S. Liu and others, at Kaoyue, Kiangsu, a small city situated to the north of Yangtze River and on the eastern bank of the grand canal, at a total capital of $40,000.

Two New Electric Light Companies, Chekiang.—Electric light plants at Po-yuen-chen, Kashing, and Jui-an, of Wenchow, Chekiang, are being established by local wealthy merchants, and are expected to operate soon. The machinery was purchased in Shanghai.

Japanese Electric Combines.—Tokyo will in future be a field of keen competition among several companies for the supply of electric power and lighting. In addition to the fairly numerous existing companies, the Keihin Electric Power Company, the Kanto Water Power Electric Company, and the Gumma Electric Power Company are now being organized. The aggregate supplying capacity of the latter and of the companies already in existence will soon far exceed the demand for the entire city and neighborhood, and the question of regulating supply and demand is being considered by the respective companies as a matter of grave importance. It is probable that some companies will eventually combine in order to avoid competition.

The Tokyo Electric Light Company amalgamated with the Nippon Electric Light Company some time ago, and more recently with the Tone Water Power Electric Company. It is now about to amalgamate with the Tone Electric Power Company, the negotiations for the operation having now been concluded. In addition, the Tokyo Electric Light Company, being a large shareholder in the Shinetsu Electric Power Company, controls a large supply of electricity from that source. The Shinetsu Electric Power Company has recently amalgamated with the Nakatsugawa Water Power Company, which will shortly begin its power-house operations; consequently the supplying capacity of the Shinetsu company is expected to increase considerably in the near future. In these circumstances the Tokyo Electric Light Company possesses a paramount position in the supply of electricity in Tokyo and the neighborhood.

Hydro-electric Combination, Japan.—A new attempt at combining water power enterprises in Miyazaki prefecture is made by business interests in Kyushu and Osaka. It is promoting a plan to float a new joint stock company capitalized at Y.20,000,000, which is made to take over all enterprises there which are now in existence or construction.

Medical Electrical Apparatus Company, Ltd.—Has been organized with a capital of Y. 100,000 quarter paid up to manufacture electrical apparatus for hospitals. Office, 1 Izumicho, Kanda-ku, Tokyo. Manager, K. Takata.

Electric Tramway Project, Changsha.—An electric tramway between Siangtan and Changsha, a distance of 30 miles, is being mooted by the gentry of Hunan. It is proposed to utilize the existing military road between the two cities to save cost of grading. The country is flat and construction comparatively easy.

Nogami Company, Ltd.—Has been organized with a capital of Yen 1,000,000, quarter paid-up, to manufacture electric machines and appliances and to contract for general construction work. Offices, 47 Sanchome, Kitahama, Osaka. Managing Director, K. Nogami.

Kaifu Hydro-Electric Company, Ltd.—Is a new enterprise in process of organization to operate in Tokushima prefecture, Shikoku Island, Japan. The president of the new company will be Mr. Genjiro Yuki. Plans for a power house and transmission line are now being drawn.

Meiji Electric Company.—Has been organized as a partnership to engage in the sale of electric material. Offices, 86 Minami Sakaigawa-machi, Nishi-ku, Osaka. Manager, Jiro Taneshima.

Tsuda Electric Meter Company.—Was organized recently as a limited partnership to manufacture electric meters. Offices, 183 Sangenya Kaminomachi, Nishi-ku, Osaka. Manager, Z. Tsuda.

The Yawata Mfg. Co., Ltd.,—Has been organized with a capital of Y. 120,000, quarter paid up, for the manufacture of electrical machines and tools. Office, 1583 Omori-machi, Tokyo-fu. Manager, T. Fujiya.

GOVERNMENT FINANCE

Far Eastern Republic.—Needs a loan of $250,000,000 in instalments, spread over several years, partly in cash for government purposes, but mostly in agricultural machinery and railroad supplies, which would be purchased in the country furnishing the credit. The Far Eastern republic offers as guarantee, the government's share in the royalties of concessions, of all the natural resources of the country.

The Hankow Loan.—Representatives of Messrs. Samuel & Company are in Peking negotiating with the ministry of agriculture and commerce for a loan agreement under the terms of which a new commercial market is to be established at Hankow. The only thing that prevents the agreement from being made effective at once, it is understood, is the rate of interest to be applied. The ministry of finance, so it is understood, has already made a preliminary payment of Tls. 8,520, representing the interest due to the Bank of China through loan advances, and it appears that the formal agreement for the new project will be signed this week.

Wine and Tobacco Bank.—The wine and tobacco bureau will shortly establish a bank to be known as the Wine and Tobacco Bank with a capital

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of $10,000,000, half to be subscribed by the government and the other half to be open for public subscription. Mr. Chang Show-ling is the promoter of the scheme. The director of the bank will be elected by the shareholders.

Boxer Indemnity Fund.—The boxer indemnity fund due to be paid next year is as follows: Great Britain £11,000,000; United States $36,000,000; France 390,000,000 francs: Japan, £7,600,000, Italy, 100,400,000 francs: Belgium, Portugal, Spain, Holland, Sweden, Norway, etc., 50,000,000 francs. The government is negotiating with the foreign legations the appropriation of half of the stipulated sums as an educational endowment fund.

INDUSTRIES

Ishikawa Shoten was organized recently as a limited partnership for the sale of metals. Offices, 16 Sanchome, Honzaimoku-cho, Kyobashi-ku, Tokyo.

Morino Shoten is a new concern established for the sale of metals. Office, 6 Gochome, Nishinagobori, Nishi-ku, Osaka. Manager, O. Morino.

Canton Manual Training School.—There will soon be a school for the training of skilled machinists. It will give training in the elementary branches of mechanics and as the sessions are to be held at night, it will afford opportunity to those now occupied in different branches of unskilled labor to acquire knowledge which may benefit them in seeking a better livelihood.

Brick, Tile and Cement Project.—A cement, brick and tile plant will be established at a suitable location in the Ta Hu Lake region as a result of the proposed lake improvement scheme now being carried forward under a commission headed by C. T. Wang.

Industrial Development in China.—According to investigations recently made, the number of factories throughout China stood at 19,321,478 of which carrying on the work by means of motive power. The largest number of factories is situated in Chekiang province, the total reaching 2,500 and Chihli province comes next with 2,267 factories. There are 2,398 cotton cloth factories, paper mills 2,327, oil factories 1,496 and sake factories 1,668. The minimum wage of workmen is 5 cents and the maximum wage 62 cents on an average per day.

Aerated Water Factory, Hangchow. — An aerated water factory is shortly to be established in Hangchow near the West Lake with a capital of $50,000.

Sugar Factory, Shanghai.—A sugar factory will shortly be established in Shanghai by Chinese returned merchants from Formosa. The owners of the Hsing An Sugar Factory in Formosa have already raised $500,000 for the experimental planting of sugar cane in China. If this experiment should prove successful $1,500,000 will be needed to establish a factory.

Hunan Cotton Mill.—A procession of fully 1,000 workmen recently walked through the streets of Changsha on the morning of March 21, the demonstration being in opposition to the intention of the authorities to place the Hunan Cotton Mill at the disposal of merchants of other provinces. The demonstrators declared that the mill is the property of Hunanese and that if it be mortgaged outside the province they will fight the authorities.

New Brick and Tile Factory, Java.—A new brick and tile factory is about to be erected near Sourabaya that will be capable of turning out twenty million bricks yearly. In order to be independent of native labor the work will be done entirely by mechanical methods.

Paper Mill, Java.—The erection of a paper mill at Padalarang (Preanger Regencies) is now assured.

Confectionery Factory, Java.—A company called the "First Neth., Ind., Electric Factory of Confectionery" has been organized at Bandung, with the object of opening a confectionery and sweetmeat business there.

Kwangsun Oil Mill, Nantungchow, established in 1903, with a capital of Tls. 300,000, yields more than thirty thousand piculs of cotton oil and more than twenty thousand piculs of cotton oil cake, valued at about $500,000. A German chemist is in charge of refining the oil.

Nantungchow Industrial Notes.—The Fo Sin Flour Company, of Nantungchow, established by Mr. Chang Chien, has increased its capital from $140,000 to $350,000. This mill has an annual output of 650,000 bags of flour and 113,000 bags of corn meal valued at $1,900,000. The net profit of the company in 1920 is reported to be $130,000.

The Da Sun Weaving and Spinning Company Nantungchow founded by Mr. Chang Chien in 1905, with a capital of $2,050,000, is operating 65,380 spindles and 480 looms, and employing 5,500 workers. The annual producing capacity of the company is 47,000 bales of yarn valued at $200 per bale and 130,000 pieces of cloth valued at $14 each piece. The net profit of the company in 1920 totals Tls. 2,000,000, 14,000 new spindles and 300 power looms are being added.

Industries at Woosung.—Two large cotton weaving and spinning mills will soon commence operations at Woosung. The first, or Da Chung Hua Mill, capitalized at Tls. 2,000,000, will operate with 42,000 spindles, and full equipment of modern machinery ordered from England. Boilers, motors and 12,000 spindles have been shipped, and the factory is expected to start operation with 12,000 spindles in August of this year. The company will also establish a dyeing factory as one of its departments, also an electricity supply company at a capital of Tls. 400,000.

New Industries for Shanghai.—Mr. Y. S. Ma, owner of the M. Y. San Confectionery Company of Shanghai, and Mr. Chang Chien, of Nantungchow, plan to establish five large factories in Shanghai for making biscuits, confectionery, glass, machinery and sugar. The capital of the enterprise will be $15,000,000. A lot of land 200 *mow* in area at Yi-chow-tang along the Whangpoo River has been purchased for factory sites. Mr. Ma is proceeding to Foochow, Amoy, Swatao, Hongkong and other places, to invite share subscriptions. When $10,000,000 is subscribed the company will be organized.

Yangtze-chang Industries.—Yangtze-chang is a small village situated on the Whangpoo River south-west of Shanghai. Many modern industrial enterprises have been founded in this small village by Mr. H. C. Mo.

There is a large ginning plant operating 80 hand and 30 power gins, and a yarn mill capitalized at Tls. 600,000, equipped with 10,200 spindles, and employing 700 workers. A bank is being organized with a capital of $500,000. Communication facilities are not good and Mr. Mo has determined to build a 70-li automobile road at an estimated cost of $300,000.

Paper Mill Project, Nantungchow.—According to a report of the chamber of commerce, Nantungchow, requires four hundred thousand dollars worth of native and foreign paper every year for manufacturing purposes. Mr. Chang Chien plans to establish a paper mill with capital derived from a local loan. This scheme will be carried out after the completion of the organization of the Nantungchow Electric Light Company.

New Branch of Da Sun Cotton Mill.—The site of the eighth branch of Da Sun Cotton Mill was at first to be located at Sze-yang-pa, on the southern bank of the Grand Canal, but, owing to being too far away from the new electric light and power plant the factory will be situated at Han-hsian-pa, south of the city.

Match Factory, Chinkiang.—The buildings for a new match factory in Chinkiang have been completed. The machinery will be driven by an internal combustion engines, using kerosene oil. A rich Chinese has purchased some land in Chinkiang and intends to clear it off and erect another match factory there.

New Factory Schemes, China.—The Peking government recently circulated a telegram instructing the provincial authorities to devise measures and secure funds locally to establish as many factories as possible to provide employment to soldiers, so they will not be compelled to turn brigands when the projected scheme of disbandment is put into execution.

S.M.R. Industrial Budget.—The South Manchurian Railway Company's industrial activities for the year 1921, will cost Y.75,960,000, which, compared with last year's expenses, shows a saving of Y.44,000,000.

New Cotton Mill, Shanghai.—It is reported that Tuchun Meng En-yuan, of Kirin, General Li Hsing, brother of the late Tuchun Li Shun, and others, have raised about $1,000,000 for the establishment of a cotton mill in Shanghai. A deputy has arrived here to purchase a suitable site and order machinery. A contract for the purchase of machines has been signed and plans are being drawn up for the buildings.

New Soap Factory, Ningpo.—A new soap factory is to be established at the Heidzaomen by Ningpo merchants with a capital of $20,000.

Woollen Mill for China.—It is reported that the American Woollen Company will build a factory for the making of woollen cloth either in Japan or China.

The proposed factory will be built in the Far East to escape the high wages paid labor in the United States. At present the firm is doubtful which of the two countries will furnish the best location, but China is thought to have a slight advantage over Japan. The wages in China are lower than in Japan, but the tariff on imported wool in China is higher than here. This necessitates a thorough investigation by the company's representative.

The American Woollen Company is said to control most of the wool produced in Australia and the Far Eastern factory will be built to convert this into cloth. There is as yet no indication of the city in which the factory will be located in case it is built in Japan.

It is understood that the company plans the expenditure of several million dollars in building the plant, all capital to be furnished from America. The American Woollen Company is capitalized at a hundred million dollars. According to its financial statement for 1920 the profit amounted to $6,855,259 and the surplus was $31,508,732.—*Japan Advertiser.*

The Watanabe Co. was recently established as machine and tool manufacturers at 7 Shintanimachi, Osakakusa, Tokyo.

The Kawahara Iron Works was organized recently to manufacture machines and tools. Office at 805 Minamisokai, Gawamachi, Nishi-ku, Osaka.

The Masumoto Iron Works was organized recently with office at 83 Nichome, Honda Machi, Nishi-ku, Osaka, for the manufacture of machine tools.

The Tokyo Glass Industrial Co., Ltd. was recently organized with a capital of Y.100,000 to manufacture glass. Office, 13 Uneme-cho, Kyobashi-ku, Tokyo.

The Nakamura Industry Co. has been organized at 10 Itchome, Tokiwa-sho Fukagawa, Tokyo for the manufacture of machinery.

The Haneda Belt Manufacturing Co., capital Y.1,000,000, has been established to manufacture leather belting. Offices, 13 Satode-machi, Honjo-ku, Tokyo.

The Japan Tile Manufacturing Co., capital of Y.1,000,000, quarter paid up, will commence work shortly with offices at 23 Kamakura-gashi, Kanda-ku, Tokyo.

The Takaoka Manufacturing Co. offices, 54 Nichome, Yanagawara-cho, Honjo-ku, Tokyo, will make machinery and equipment for chemical factories.

The Tokyo Bosai Industrial Co. has been established with offices at 9 Michome, Kyobashi-ku, Tokyo, to manufacture machine tools.

The Kanto Kako (Chemical Industry Co., Ltd.) was organized recently with a capital of Y.70,000, with office at 538 Irugi-bashi, Tokyo, for the purpose of manufacturing chemicals.

The Teikoku Spinning Co. has been established at 3445 Nishisugamo-machi, Tokyo, to manufacture spindles, etc.

The Kaida Co., Ltd. was recently formed with offices at Kitanaka Utura-dori, Sennan-gun, Osaka, to manufacture dyes.

The Aoi Gumi was recently organized as a limited company under the management of Y. Sato for the manufacture of construction and fire-proofing materials. Offices, 11 Hachikan-cho, Kyobashi-ku, Tokyo.

New Breweries, Japan.—It is reported that the Teikoku Brewery Co. will erect a brewery at Shimonoseki and the Dai Nippon Brewery Company will erect another plant at Fukuoka city.

Toyo Brush Manufacturing Company has been organized as a limited partnership to manufacture brushes. Offices, 967 Sagisu-machi, Nishinari-gun, Osaka. Manager, Mr. Hosokawa.

Nippon Cordite Company, Ltd. has been organized with a capital of Y. 1,000,000, all paid up, to manufacture explosives. Offices, 1 Itchome, Yuraku-cho, Kojimachi-ku, Tokyo. Managing Director, Soichiro Asano.

Kanto Leather Company, Ltd. has been organized with a capital of Y. 150,000, quarter paid up. Offices, 2430 Mikawashima-mura, Kitatoyoshima-gun, Tokyo-fu. Manager, W. Uyehara.

Kirin Paper Mill.—A Sino-Japanese enterprise with a capital of Y. 5,000,000, has been organized by Baron K. Okura and General Ho-Ki of Kirin to erect a paper mill. Permission has been solicited from the ministry of commerce and agriculture at Peking.

Tokyo Yushitsu Celluloid Seizo Kaisha.—(Tokyo Celluloid Manufacturing and Export Company) has been organized with a capital of Y. 500,000, quarter paid up, for the manufacture and sale of celluloid articles. Offices, 256 Yanaka, Nippori, Tokyo-fu. Managing Director, I. Takagi.

Obitani & Company, Ltd. has been organized with a capital of Y. 1,000,000, one half paid up, for the manufacture of cotton cloth. Offices, 1026 Kaizuka-machi, Sennan-gun, Osaka fu. Manager, R. Tsuji.

The Nishiyama Iron Works has been established as a limited company for general machine and foundry work. Offices, 105 Nishikujo Shimonomachi, Nishi-ku, Osaka. Manager, U. Nishiyama.

Miyamoto Shoten has been established as a limited partnership for the sale of asbestos, machine tools, etc. Offices, 10 Itchome Kami Fukushimanoka, Kitaku, Osaka. Manager, D. Agata.

Shibazono Iron Works, Ltd. has been organized with a capital of Y. 200,000, fully paid up, to manufacture machinery and tools for the army and navy arsenals. Office, 46 Matsumoto-cho, Shiba-ku, Tokyo. Manager, M. Ota.

Yoneda Mining Company, Ltd. organized two years ago with a capital of Y. 1,000,000 for gold mining has removed its offices from Osaka to 13 Nichome, Kobiki-cho, Kyobashi-ku, Tokyo. Managing Director, M. Kasaginu.

Tairiku Production Company, Ltd. was organized with a capital of Y, 230,000, quarter paid up, for engaging in gold mining. Offices, 4 Sanchome, Nishi-ku, Kanda-ku, Tokyo. Managing Director, J. Miyake.

MINING

Shantung Gold Mines.—The *Sheng Pao* says there are more mines in Shantung than in any other province in China. Since the occupation of Tsingtao, mining enterprises have been carried on by Japanese on a large scale. About twenty such corporations have already been registered. According to the latest reports from Shantung, some Japanese and Chinese have discovered gold mines in Chihsien. These mines were operated in old times, and were evidently "sealed" up by authorities. Two Chinese named Chi and Wang are trying to raise capital to work them.

Kailan Developments.—During the current year, two new pits will be sunk to increase the output and the work of double-tracking the railway between Kaiping and the Lanchow collieries and Chinwangtao, the line being exclusively for coal transportation, is expected to be comprleted within the coming 18 months, while the present wharf equipment at Chinwangtao will be enlarged to meet the greater demand upon it.

A big coal-loading wharf is to be established at Tongku, at the mouth of the Peiho, in addition to the erection of an extensive steel plant at Chinwangtao, at an estimated outlay of $25,000,000 Mex., the plant to have a capacity of 250 tons daily, and will smelt ore from Paohsingshan, in Anhui province, along the lower Yangtze.

It is said that the Chinese government will exempt the output of the Kailan mining administration from likin and other taxation, with the object of accelerating the industry.

The annual amount of Kaiping coal now imported into Japan totals about 700,000 tons, but this will be increased to 1,000,000 tons upon the completion of the enlargements and improvements.

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Additional Foreign Connections Desired.

The Taisho Mining Co., Ltd. was organized recently with a capital of Y.500,000 with offices at 19 Nichome, Kaga-cho, Ichigaya Ushigome, Tokyo.

The Rasa Phosphorous Mining Co., of Osaka, has opened a branch at 1 Itchome, Yuraku-cho, Kajimachi-ku, Tokyo. Its capital is Y.1,500,000 fully paid up.

Japan Coal Enterprise, Saghalien.—A semi-official company with a capitalization of Y. 80,000,000 of which the Japanese government will own one-half, is to be formed for the exploitation of the mineral deposits of Saghalien. The island is believed to have some of the richest coal deposits in the world, the estimates of experts as to the extent of the deposits varying from half a billion to seven billion tons. The company will also improve ports and build the railways needed for the marketing of the output.

The Nippon Industry Co., Ltd., with a capital of Y.150,000, will engage in mining business. Its office is at 5 Sanchome, Yuraku-cho, Kajimachi-ku, Tokyo.

The Kyowa Coal Mining Co.—Has been established with a capital of Y.50,000, quarter paid up. Offices at 1 Nichome, Minami-maki-cho, Kyobashi-ku, Tokyo.

The Miike Coal Mining Co. with a capital of Y.7,500,000, half paid up, will soon commence operations. Offices, 1 Minami-maki-cho, Kyobashi-ku, Tokyo.

New Coal Mines, Japan.—The Daido Industrial Company, of Osaka, recently commenced coal mining operations in the Ayabe-machi district of Kyoto prefecture.

Another Mining Monopoly.—With a view to placing all the undeveloped mines in Chihli under the control of the provincial government, Tuchun Tsao Kun sent a petition to the presidency for the establishment of a mining administration bureau on the lines of the government mining bureau of Hupeh.

Graphite at Laiyang.—A deposit of graphite suitable for lead pencils has been discovered in the northwestern part of Laiyang Hsien, Shantung, at a village called Yuehsoih. The owners are proposing to open the mine under the Chinese bureau of mines regulations for the exploitations of a second class mine.

As these regulations state that a second class mine can be operated only with the consent of the people of the immediate district, a number of the progressive younger gentry of Laiyang district have formed an association pledged to either compel the operators to devote 2 per cent. of the proceeds of the mine to education within the county or to obstruct the operation.

Tin in Johore.—The firm of Messrs. Sime, Darby & Co., report the discovery of tin in Johore and claim that the find is more valuable than any hitherto made in Malaya.

Canton Mining Bureau.—A bureau of mines has been established with offices in the Treasury Building. This bureau will control all the mines of the province and issue permits in accordance with the mining laws.

Mr. Tung Chic-yi, a well-known miner and capitalist in the Straits Settlements, was appointed chief of the bureau and a place on the second Maloo in Tung Kuan has been secured as headquarters.

With his wide experience in mining enterprises in the Straits Settlements, Mr. Tung is a very capable man for the position. Great confidence is placed in him by the military government to assist in the development of the vast mineral resources of the country.

Kungchangling Iron Mine.—An agreement was concluded between Mr. N. Iida (a Japanese) and the Fengtien provincial authorities to work the iron mine in Kungchangling in Fengtien province under Sino-Japanese joint management. This took place in May, 1916. The Peking government gave sanction to the enterprise, and preparations for beginning mining work were taken up at once. The Peking government however, failed to hand down a formal permit, much to the impediment of the work. Military Inspector Chang-tsolin of Manchuria has been pressing the Peking government from time to time, and we hear, the desired permit has been issued by the department of the agriculture and commerce.

According to reports received from Fengtien, the Japanese "San Lin" Company has formed a corporation with the provincial authorities for the operation of these mines. A railway is to be constructed from Mukden to Kungchangling and will then be extended to Liuyang. Two iron bridges are to be built and tunnels constructed. It is stipulated that all iron ore is to be sold to Japan.

Kungchangling is situated at about 22 miles southwest of Chiaotou on the Mukden-Antung Line, and its mining zones consist of Huangnikou section comprising 698,725 *tsubo*, Kungchangling section comprising 3,696,881 *tsubo*, and Talatzu section comprising 2,328,484 *tsuho*. Its total iron reserve is estimated at not less than 200,000,000 tons. No modern equipment, worth mentioning has yet been installed. The result of analysis of the rich ore mined thereat is as follows:

Iron	71.200	per cent.
Silicic acid...	0.320	,,
Sulphur	0.024	,,
Phosphorus	0.017	,,
Specific gravity	4.5-4.7	per cent.

Mining Industry, Japan.—The number of applications filed with the authorities for mining rights during January and February of this year stood at 1,591 only, while that of the corresponding period of last year was 3,732. The copper industry has suffered the severest blow. Coal mining has also suffered and the number of applications presented to the authorities during January and February reached 467 only, a decline of 1,484 as against the same period of the preceding year. It is expected that the output of coal for the current year will show a marked decline. On the other hand, petroleum mining is being carried on rather prosperously.

MINT

Java Mint.—The erection of a separate mint for the D. E. Indies is being considered. Mr. Vissering, president of the bank of the Netherlands, is in favor of the creation of a special Indian guilder, to be called "rupee" for use in the colony.

OIL

Taiwan Oil Field.—The 18th well of the Hoden Oil Company at Shinchiku, Taiwan, sunk to a depth of 140 feet, suddenly spouted at the rate of 20 *koku* in two hours.

Japanese Petroleum Notes.—The Nippon Oil Co. has succeeded in increasing the output of its oilfields in Akita prefecture since last spring in order to make up for the gradual decrease of the output in the Echigo oilfields. The output of the Kurokawa field has recently increased to over 1,400 *koku* daily. The new oilfield at Uruyama is very promising, ten wells producing about 230 *koku* daily. Other oilfields at Kuroiwa, Katsurada and other districts are also reported to be promising. The total output of the wells in the possession of the company, says *Reuter's* trade service, at present exceeds 2,500 *koku* a day, an increase of about 500 *koku* compared with last spring.

In the island of Sakhalin, a syndicate recently organized by the Nippon Oil Co., the Hoden Oil Co. and Kuhara Mining Co., and other interests, is pushing further developments, and at five points along the sea-coast of the island, wells are being drilled. So far, however, no commercial oil supplies have been met with. In Borneo it is reported (and we give the report as received, and with reserve) that a party of Japanese sent out by the Kuhara Mining Co. on the strength of its acquisition from a British Borneo company of the right to exploit petroleum districts in North Borneo, has met with success. The presence of good pools has been proved and wells are now being drilled.

The total amount of petroleum produced throughout Japan during last year reached 3,605,000 *koku*, a decline of 3,000 *koku* as compared with the preceding year. The details in comparison with three preceding years are as follows:

	1917	1918	1919	1920
	(In 1,000 *koku*)			
Crude oil ...	2,600	2,235	2,072	2,084
Naphtha	125	147	148	146
Illuminating oil ...	456	308	244	185
Light oil	615	656	580	615
Machine-oil ...	353	347	366	390
Fuel oil	549	332	198	185

The Asahi Petroleum Co., Ltd. has been organized at 26 Minami Konya-cho, Kyobashi-ku, Tokyo, to operate a refinery.

The Taiyo Petroleum Co. will increase its capital from Y. 5,300,000 to Y. 6,500,000, for extensions in their business.

The Yushui-Shokai has been established for the purpose of developing oilfields. Office at 1 Itchome Yuraku Ano, Kajimachi-ku, Tokyo.

Japanese Prospect Borneo Oil.—Following an investigation made by the South Seas Exploitation Union, organized by Messrs. Kuhara and Company, of Osaka, the Mitsubishi Company and Messrs. Suzuki and Company, of Kobe, it is stated that the Kuhara Mining Company acquired petroleum concessions in North Borneo last year, working these conjointly with the Hoden Oil Company and the Rising Sun Company. Kuhara and Company drilled about a dozen oil wells during 1920, but they did not yield satisfactory results. Though the company is said to have lost £500,000 on these first wells, they will sink about twenty more during 1921.

RAILWAYS

New Railway Loan.—To facilitate the transportation of coal the Kailan Mining Corporation submitted a proposal to the ministry of communications to double track the Peking-Mukden Railway between Tangshan and Shanhaikuan. Arrangements are now being made to commence work, and in order to provide funds the ministry of communications are negotiating with the Peking Syndicate for a loan.

Inner Mongolian Railway.—It is reported among Chinese military men that for frontier defensive purposes, the high authorities in Fengtien and Heilungkiang have approached the Peking government recommending the construction of the proposed Chinchow-Aihun trunk line which was dropped on account of the joint opposition of Russia and Japan some years ago.

Shimonoseki Ferry.—The railway department has decided to build two ferry boats with a view to improving the ferry service in the Shimonoseki Strait. When they are completed the squadron of ferry boats there will have a capacity of carrying 500 freight cars a day.

Chinese Engineer Honored.—The erection of a bronze statue to the late Mr. Jeme Tien-yu at Pataling, on the Peking-Suaiyuan Railway is proposed by Chinese railway officials, as a tribute to his memorable services as Engineer-in-Chief of the Peking-Kalgan Railway, the only railway under complete Chinese control.

Chinchow Chiaoyang Line.—The survey of the Chinchow-Chiaoyang railway line has been completed and construction work begun. The line starts at Chinchow on the Peking-Mukden line and ends at Chiaoyang, Inner Mongolia. The line will be operated as a branch to the Peking-Mukden line and the expenses for the construction will be provided from the income of that railway.

Hukwang Railway.—The survey of the 500-li extension of the Hankow-Canton railway from Hunan to the border of Kwantung being completed, President Yen of the railway, now in the United States, is reported to be trying to raise funds for its construction. It is thought he will be unsuccessful, however, as the United States is a member of the new loan consortium. In the meantime, preparations are being made for the purchase of the necessary land.

Chekiang Railways.—The Tuchun of Chekiang is anxious to employ his soldiers to build the railway from Hangchow to Gyiuchow.

The treasurer has paid the surveyors of the new road from Hangchow to Foochow the first instalment of $6,300, and no one is to get more than $2 a day.

Shimonoseki Tunnel.—The geological survey of the sea beds in the Shimonoseki Strait is practically finished.

The survey was started in the financial year 1919, 1920 by effecting the boring of the sea beds at seven points. Lately the depth of 100 to 120 feet has been reached and it is now ascertained that at most points the sea beds are of the same strata and that the tunnelling work can be easily proceeded with, it is stated.

On the strength of this result, experts are now being commissioned to frame a working plan for tunnelling while at the same time preparations will be pushed for actual works. According to a report from an official source, the preparatory work will be finished in the financial year 1921-22.

In the year 1922-23 the actual boring of the sea beds will be commenced to have an under sea tube which will serve to connect the Kobe-Shimonoseki Railway line with the Kyushu Railway terminus without the medium of the ferry service as at present.

Pending the formulation of the working construction plan no particulars about the tunnelling works can be obtained, but it is stated that boring will be effected at the depth of 150 feet from the sea beds.

Li Hsien Coal Mining Co., Anhuei.—The Li Hsien Coal Mining Co., Hsien-chen, Anhuei, operating the coal mines in Feng Wang Shan mountain, having an output of about 70 tons of coal per day, will build a light railway connecting the colliery with the sales department, a distance of about three li.

Japan Orders Locos.—Experiments having proved satisfactory, it has been decided to order 200 new locomotives from the Kawasaki Dockyard, the Hamamatsu Government Works, the Japan Car Co. and other large locomotive builders.

New Station and Line, Japan.—To build a station at Suita the Kobe government railway office will expend Y.500,000 and for constructing the Joto line Y.700,000 will be spent.

New Lines, Japan.—Permission has been granted for the construction of railways between Kitakata, Fukushima prefecture and Yonezawa, Yamagata prefecture, also the building of another line between Hawatoubetsu and Okibe, Kokkaido and still another between Hahamatsu, Shidzuoka prefecture and Tatsuo, Nagano prefecture.

New Locos, Japan.—Locomotives with a wheel diameter of 5 feet 9 inches, six inches larger than the size of wheels on ordinary locomotives, are to be used on the Tokyo-Shimonoseki Railway.

Harbin-Aigun Railway.—There have been frequent reports in the *Chinese Press* to the effect that the Chinese government has cancelled the agreement made sometime ago with the Russian interests for the construction of a railway from Harbin to Aigun via Mukden and connecting Tsitsihar with Mukden, and that this line would be built by a Chinese company. The ministry of Communications states that there is no truth in this report.

Improvements, Shidzuoka.—Extensive plans are being prepared in connection with tunnel building, quay construction and tram lines by the transportation office of the Shizuoka prefecture. It is expected that the sum of Yen 15,000,000 will be used for the purpose.

Paotow Extension, Peking-Suiyuan Railway.—The cost for building the Paotow branch of the Peking-Suiyuan Railway is estimated at about $5,120,000.

Proposed S.-N.-R. Branch.—Chi-tze-yen is a busy market, situated to the east of Changchow, Kiangsu, a city located on the Shanghai-Nanking railway, but there is no connection by rail between the cities. The residents of Changchow have now raised a fund and have asked the Shanghai-Nanking Railway board to build a short branch line from Changchow to Chi-tze-yen.

Hangchow-Mokanshan Branch of S.-H.-N. Railway, Mokanshan.—The S.-H.-N. board is planning to build a branch line from Hangchow to Mokanshan, a distance of about 30 miles.

Steel Rails for P.-S. Railway.—A lot of 85-lb. steel rails has been purchased by the Peking-Suiyuan Railway for the Cho-tze-shan-Suiyuan section of the line. It is expected to complete the construction of the section in May of this year.

Car Factory, Java.—In one of the harbors on the north-coast of Java a German concern intends to erect a railway-car factory.

Ssupingkai-Taonanfu Line.—The Ssupingkai-Taonanfu Railway intends to commence work on the extension from Chengchiatun to Taonanfu from 1st April. 3,000 people from the famine stricken district in North China are to be given employment, and sent back to their homes after the completion of the work.

Hankow-Canton Railway.—Owing to the lack of funds, construction work on the Hankow-Szechuen railway will be suspended, but the government will immediately take up the building of the Hankow-Canton line. In order that the Hupeh-Hunan section will reach the important city of Hengchow, the government has ordered the administrations of the Peking-Mukden, the Peking Mukden, the Peking Hankow, the Tientsin-Pukow Peking-Shui-yuan railways to supply funds as follows.

The Ching-Han line will set aside sum of one hundred and thirty thousand dollars per month, the Cheng-Feng and the Tsin-Pu lines one hundred and twenty thousand dollars per month each, while the Ching-Shui line will only subscribe thirty thousand dollars per month, total four hundred thousand dollars every month, from their surplus receipts, for the immediate construction of the Chuchow-Sintzelin section in Hunan. It is estimated that the sum of fourteen million dollars will be required during th first three years while the building of the Sintzelin-Hengchow line will require about seven million dollars for the fourth and fifth years. It is reported that within five years, the Chuan-Yueh-Han trunk railway will reach the Kwangtung frontier and then it will connect with the Canton-Samshui section in Kwangtung province. The government has been forced to do this because there is no hope of any foreign loan for the construction of this most important trunk railway in China and also its completion will render the reunification of the North and the South of China much easier and earlier as better communications will improve the political situation.

Locomotives for Russia.—At present there are 1,700 locomotives under construction for Soviet Russia in foreign countries. 1,100 of these locomotives are being built in Sweden and 600 in Germany. The German locomotives will be ready in May and those of Sweden, in August. Besides, there is a big order for various railway supplies placed in Germany.

Proposed Tienpaoshan-Tumen Railway.—In 1916 a proposal was submitted to the government by Mr. Wen Loo of Kirin, backed by certain Japanese financiers, for the construction of a railway from Tienpaoshan, near Antung, to the Tumen River. A sino-Japanese company was to be formed with a capital of Y. 2,000,000, half of which was to be subscribed by the Chinese and the other half by the Japanese. It was proposed that the shares should be Y. 1,000 and that half of each share should be held by Chinese and the other half by Japanese. In that year the government was adopting a pro-Japanese policy and the principle of the scheme was agreed to. Since then five years have passed and nothing further has been done in the matter, but it is now understood that Mr. Wen Loo who arrived in Peking recently, intends to approach the government again on the question. Owing to the complicated character of the proposed company, the government will reconsider the whole scheme before any steps are taken.

Locomotive and Waggon Tender.—The Chinese banking group, located at the Peking Bankers' Association, Chienmen, Peking, announces that tenders for the supply of materials as described hereunder will be opened at the head office at 2. p.m. on 28th June, 1921.

30 locomotives, Prairie type, 2 locomotives, Mikado type, 3 locomotives, Pacific type, 6 locomotives, English type, 200 40-metric ton all steel high side open waggons. All for the Peking Hankow, Peking-Suiyuan, Tientsin-Pukow and Shanghai-Hangchow-Ningpo Railways.

Elevated Railway, Tokyo.—An elevated railway, two tracks, will be built between Manseibashi and Uijeno at a cost of Y. 24,000,000.

Tokyo Underground Railway.—With machines that will bore 100 feet every day recently purchased in Europe by Chief Engineer Yada of the Tokyo Underground Railway Co., a commencement with the proposed tunnel wjll be made shortly.

New Locos, Japan.—The railway journey between Tokyo and Kobe, by the special express, will be shortened by two hours on the completion of big locomotives, now under construction at the government railway bureau, of which a trial was conducted recently. The result of the trial was successful, as the new locomotives proved capable of running more than 52 miles an hour between Hamamatsu and Kobe, 44 miles between Kyto and Osaka. They will be able to draw a 42-coach train.

Peking-Mukden Improvements.—A correspondent has furnished a few facts showing what is being done to improve conditions on the Peking-Mukden line. It is expected that very shortly eight more goods engines which are on their way from the United States will have been put into service; four other heavy type goods engines are being tendered for, and five are being built in the Peking-Mukden railway works at Tongshan. In addition to these, it is hoped that sanction will shortly be given for the purchase of five more heavy passenger engines, which, it is anticipated, will be in use by next autumn. Permission to buy 200 40-ton steel cars and 200 30-ton covered cars have also been requested, all these being essential to cope with the rapidly increasing traffic. In addition, 60 30-ton covered cars are being constructed at Tongshan, where also five first-class passenger cars, four first-class buffet cars and three first-class sleeping cars are being built. Twenty goods sheds have also been demanded, and sanction for 41 more will be applied for very shortly. If authority is given, goods sheds will thus be provided at all the principal stations along the Peking-Mukden line.

It is satisfactory to record that between Shanhaikwan and Chinhsien, a distance of about 114 miles, sanction has been given for relaying the lines with 85-lb. rails, which are expected to arrive early this spring. These will make possible the use of a heavier engine over this section, and therefore the haulage of greater loads. It is stated by the railway authorities that over the whole line the maximum traffic for a single line has not yet been reached, but it is clearly recognized that the double tracking of the line between Tongshan and Chinwangtao has become a necessity, and approval of this work has been requested.

Tokyo Underground Railway Company organized in August last year, will start this spring the construction of its proposed trunk line between Shinagawa and Senju *via* Nihombashi and Uyeno, extending for ten miles.

Trunk Line Extension.—The ministry of communications has a scheme lengthening trunk lines of all the Chinese railways. The scheme is first to lengthen the Peking-Mukden line to Tsitsihar, *via* Kingchow and Tiou-nan, the Peking-Suiyuan line to Kiakhta, extending the Peking-Hankow line southward to Canton and westward to Ili *via* Tsailanyeh, Shensi and Kansu; and later, extension of other lines will be carried out.—*Chinese press report.*

S.N.R. Receipts.—The revenue derived from freight on the Shanghai-Nanking line for January, 1921, is $9,011.40, indicating a decrease of $1,581.15 as compared with the figure for January, 1920; for February, 1921, the amount is $6,481.10, a

decrease of $1,039.70, as compared with the figure for February, 1920; and for March, 1921, the amount is $13,002.29, a decrease of $1,005.11, as compared with the figure for March, 1920. The total amount of this revenue for the three months, January, February and March, of 1921, is $28,504.79, showing a decrease of $3,625.96, as compared with the total amount of $32,130.75 for the corresponding period of 1920.—*Chinese press report.*

Ibaraki Railway Company, Ltd. has obtained permission to construct a line from Kawada-mura to Sawayama-mura in Ibaraki prefecture, a distance of 15 miles. The construction capital is said to be Y.1,500,000. Managing Director, S. Seya.

RIVER AND HARBOR IMPROVEMENTS, WHARVES, DOCKS, ETC.

Governor Tsao Suggests Improvement of Chu-lung River.—Governor Tsao Jui of Chihli suggests that a certain portion of the contributions from the American Red Cross Society for the famine relief be allotted for the dreding of the Chulung River which is regarded as one of the important waterways of North China.

Changho Harbor.—The Peking government has decided to construct a harbor at the mouth of the Changho river, by floating a loan. It is reported that the terms of the loan which is said to have already been concluded, are as follow: (1) The syndicate of bankers in Chihli province undertakes the construction of the harbor, wharves, jettyworks, lighthouses. (2) Government land will be given to the syndicate; while the land possessed by private persons will be purchased according to the current price. (3) The syndicate will establish the municipality as well as the local police force. (4) The syndicate will establish a bank and be allowed to float bonds. (5) Foreigners wil lbe employed as accountants. (6) The construction work will be extended over fifty years. (7) The contract of the loan will be signed between the Chihli local government and the syndicate.

Grand Canal Repairs.—The gentry of Nanhsin, Chekiang, Mr. Y. C. Pang and several others, have a plan to repair the eastern enbankment of that section of the grand canal flowing by the city at an estimated cost of $600,000. Funds are being secured, and work is expected to commence soon.

Tokyo Improvements.—The following improvements are contemplated by the Tokyo city office:—Widening the Irifune River, Higashi Horidome River, Satobori Canal, Kajibashi Canal. Build a new canal at Fukagawa-ku from the Oshima River. Reclaim land from Akashicho to Honminato-cho, Kyobashi-ku. Reclaim land from Ishijima-bashi to Ichujiwa, Fukagawa-ku.

Sakai Harbor, Japan.—Y.3,000,000 will be spent for reclamations in Sakai Harbor near Osaka.

Whampoa Harbor.—It is learned that the Chinese authorities have approved the suggestion to divert the $400,000 intended for the conservancy of the Canton River to the deepening of the Whampoa Harbor. The government is being approached and will be requested to communicate with the diplomatic corps regarding the matter.

Haichow Port Works.—A presidential mandate appoints Tuan Shu-yun to the post of director-general to supervise the work of constructing Haichow, Kiangsu, the future terminus of the Lung-Hai railway, into a commercial port.

Tsingho Harbor, Chihli.—A contract has been concluded between the provincial government of Chihli and the Chihli syndicate to build a harbor at Tsingho, Chili. *Chinese press report.*

ROADS

Chefoo-Weihsien Road.—Remarkable progress has been made in the construction of the Chefoo-Weihsien road. The section of the line between Weihsien and Fushan has already been completed, and it is believed that the whole road will be finished by the middle of May.

Kwangtung Road Protests.—The inhabitants of Waichow have sent a protest to the civil governor against the proposed American loan of $5,000,000 for the construction of the public roads in the east river districts. Great indignation has been raised among the inhabitants, as it is reported that a ten years' monopoly has been given to Americans for the construction of these roads.

Public Improvements, Tokyo.—Forty-nine streets within the city limits and thirty-seven stretching out into the suburbs are marked for improvement by the city planning committee of Tokyo. According to the plans as published in the Japanese newspapers, the cost of remodelling Greater Tokio city will be Y.137,000,000 ($68,500,000). The streets to be improved total 73,000 *ken*—about 438,000 feet—in length.

This is the second gigantic plan for the improvement of streets in Tokyo, the first one having been made in 1890, when 127 streets were repaired.

The widest street proposed will be about 163 feet in width—that is the street from the proposed eastern outlet of Tokyo station through the Kami-maki-cho, Nihombashi, to the heart of the city in a straight line. The narrowest will be about 36 feet in width, the classification of the improvements being influenced by the requirements of the localities.

Bridges will be built of steel, stone, steel frame and concrete or other materials of a durable character.

No street car line will be built in a street of less than 12 *ken*—72 feet—in width.

The draft also fixes the width and depth of rivers and canals passing through the city, and the height of bridges over them. It likewise provides for the dredging of canals, repairing of brooks, moats and canals and proposes to reclaim certain parts of moats for street improvement purposes.

New Roads, Taiwan.—The government of Taiwan (Formosa) has under contemplation a plan for an extension and improvement of the system of roads, which, when completed, will do a great deal towards popularizing the use of motor vehicles.

Road Work, Tsinanfu.—A road is being built to the east of Tsinan station of the Tientsin-Pukow railway, at a cost, estimated at $18,800.

Ningpo-Fenghua Automobile Road.—It is reported that an automobile road of about 95 *li* long will be built between Ningpo and Fenghua, Chekiang.

Communication Bureau, Paoshan.—A bureau has been organized, with the sanction of the ministry of communications, to carry out road works in Paoshan, near Shanghai. The bureau has undertaken to build two broad roads, one 30 miles long leading from Shanghai to Taichong, and the other 15 miles long from the city of Paoshan to Kashing.

Indo-China Roads.—It is perhaps not generally recognized that French Indo-China has probably the best roads in all Asia. At present there are about 5,500 miles of excellent roads and an additional 2,000 miles is expected to be constructed within the next four years. Such conditions present an excellent field for motor-cars, trucks and motor-cycles. Whilst cars of French manufacture are admitted free, an import duty at present prevails against other makers. Local opposition to this duty is strong.

SHIPBUILDING

Japan's Super-Dreadnoughts.—The Japanese super-dreadnought *Mutsu*, 33,800 tons which was launched at the Yokosuka naval yard in May last year, will be completed in the latter part of June of this year. It is expected that she will be delivered to the navy by the middle of August at the latest. The super-dreadnoughts *Kaga* and *Tosa*, which are larger than the *Mutsu*, which are being constructed at the Kawasaki yard, Kobe, and the Mitsubishi yard, Nagasaki, respectively, are expected to be launched this summer, the *Kaga* in May and the *Tosa* in September.

New Dollar Steamships.—The Robert Dollar Company has purchased two more of the German ships interned at Santa Rosalia—the *Walkure* and *Orotava*. The former is of 3,046 tons net register and the later 2890. They were purchased from the French government, to whom they have been allotted by the allied reparation commission. The terms of the transfer were not disclosed.

Government Steel Works, Japan.—The government will issue Japanese treasury notes to the amount of Y.23,500,000 in order to supplement the deferred working capital of government iron-works.

New Tank Steamer.—The *Tsurmi*, a special service oil carrying vessel of 8,000 Tons capacity, is being built by the Osaka Iron Works.

New Dock for Kiangnan.—The Kiangnan Shipbuilding Yard, Shanghai, will build a new dock, 500 feet long to the west of the arsenal.

New Ferry Floats.—The Japanese railway department has placed an order for two more railway car ferry floats from the Osaka Iron Worsk for the Shimonoseki-Moji service. The cost is Y. 450,000.

Kawasaki Dockyard Extends.—The Kawasaki Dockyard will increase its capital from Y. 45,000,000 to Y. 90,000,000 to take care of projected extensions which include a chemical department and aeroplane factory.

TELEPHONE

New Exchange, Japan.—At a cost of Y. 500,000 a new three storied telephone exchange will be built at Sanchome, Aoyawa.

TRAMWAYS

Automatic Distance Recorder.—The Tokyo Tramway Company has recently purchased and installed an automatic distance recording machine from America.

Tokyo Tramway Company will build a new line between Dozaka and Otsuka.

Keihin Tramway Company will build a new line between Osaka and Sakurai.

Tobu Tramway Company is building a new line between Hagyu and Oeyodu.

South Osaka Tramway Co. will increase its capital to Y. 5,000,000 in order to double track their line between Iakai and Takata-machi, a distance of 18 miles.

The Ikegami Electric Tramway Company, Ltd. has increased its capital to Y. 1,850,000 in order to extend its line between Omori and Kamatu through Ikegami.

Dairen Tramway Extensions.—The South Manchuria Railway Company's electricity works has decided to extend the tramway from the front of the company's general offices to Jijiko via the army memorial, and also from the present terminus of Fushimidai to Shotoku colony (a new colony raised by the local builders).

About 10,000 lamps are to be newly installed at Shahokou, Shotoku colony, Tanchiatun (behind and west of the S.M.R. Co. general laboratory). and part of Hsiaokangtzu.

New Tramway, Japan—The building of a new tram-line between Dozaka and Naka-machi with Y. 50,000, has been decided upon.

WATERWORKS

Hangchow Waterworks Project.—Prominent citizens of Hangchow in Chekiang province are planning to establish a waterworks in their city. It is understood that $2,000,000 will be required.

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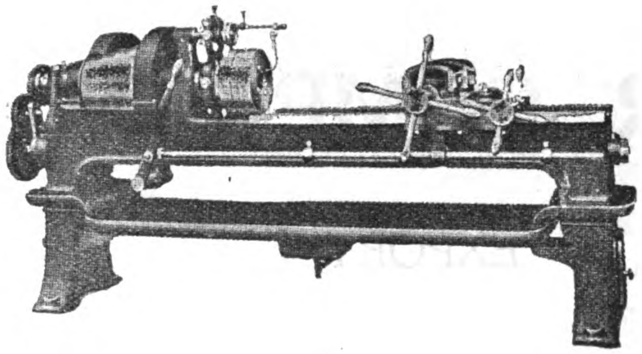

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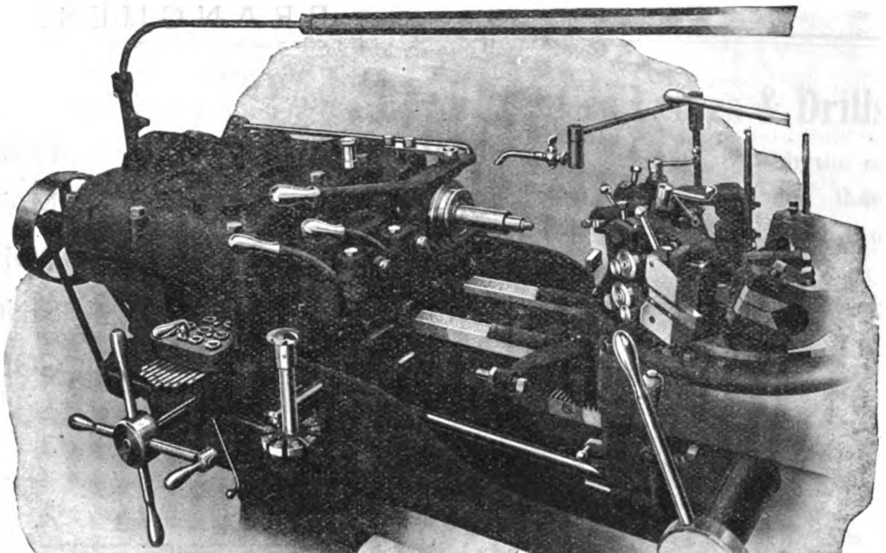

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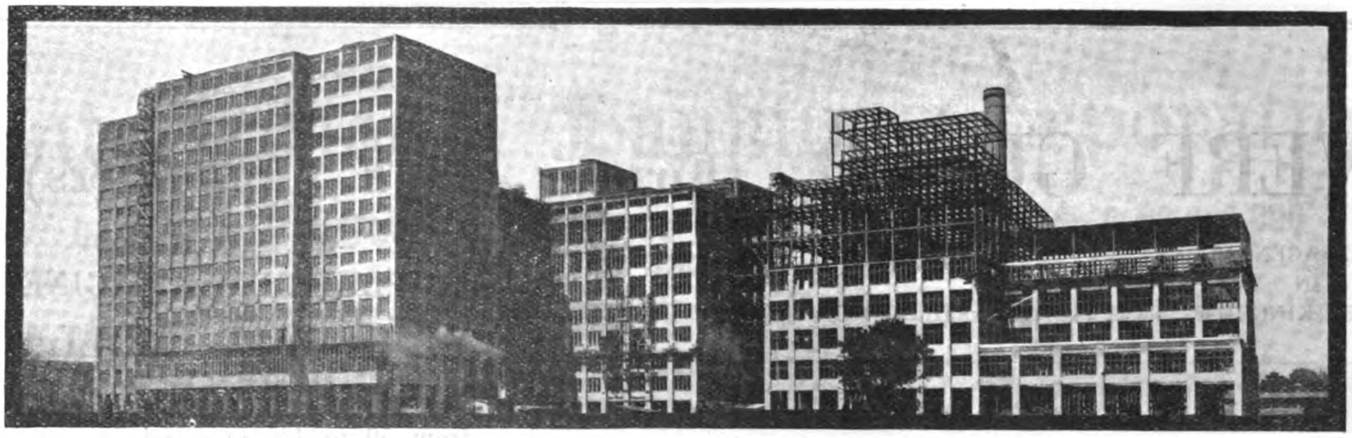

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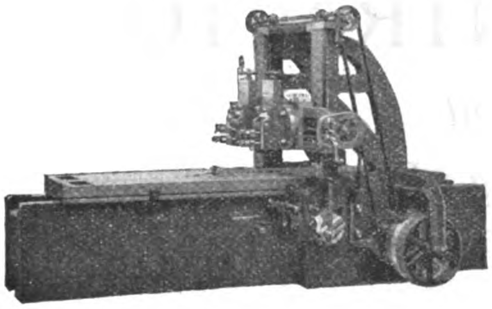

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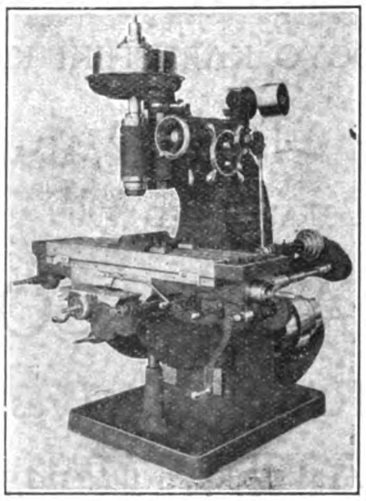

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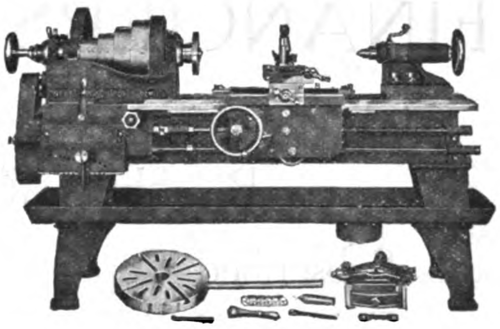

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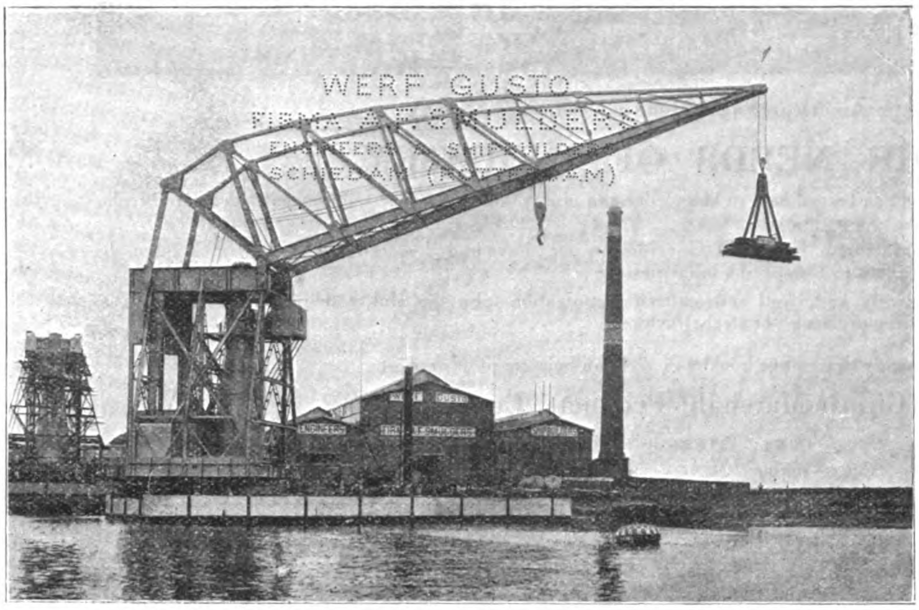

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Reserves	**„ 70,000,000**

HEAD OFFICE: 15 BIS RUE LAFFITTE, PARIS.

Succursales et Agencies:

Bangkok	Haiphong	Mongtze	Pnom-Penh	Singapore
Battambang	Hankéou	Nouméa	Pondichery	Tientsin
Canton	Hanoi	Papeete	Saigon	Tourane
Djibouti	Hongkong	Peking	Shanghai	

Bankers:

IN FRANCE: Comptoir National d'Escompte de Paris, Credit Lyonnais; Banque de Paris et des Pays-Bas; Crédit Industriel et Commercial Société Générale.

IN LONDON: The National Provincial and Union Bank of England, Ltd.; Comptoir National d'Escompte de Paris; Crédit Lyonnais.

The Shanghai Agency undertakes all banking operations and exchange business; grants credits on goods and approved securities and receives deposits on current and fixed deposits according to arrangement.

L. ARDAIN, *Manager.*

The First National Bank of Boston

Transacts commercial banking business of every nature

Correspondence Solicited

Capital, Surplus and Profits

$37,500,000

SOUTH AMERICA

HEAD OFFICE: MONTREAL, CANADA

We offer a complete banking service in the following countries, special attention being given to the handling of collections.

ARGENTINE Buenos Aires.
BRAZIL Rio de Janeiro, Santos, Sao Paulo.
URUGUAY Montevideo.
VENEZUELA Caracas, Ciudad Bolivar, Maracaibo, Puerto Cabello.
COLOMBIA Barranquilla.
BR. GUIANA Georgetown, Rose Hall, New Amsterdam.

Also 81 Branches in

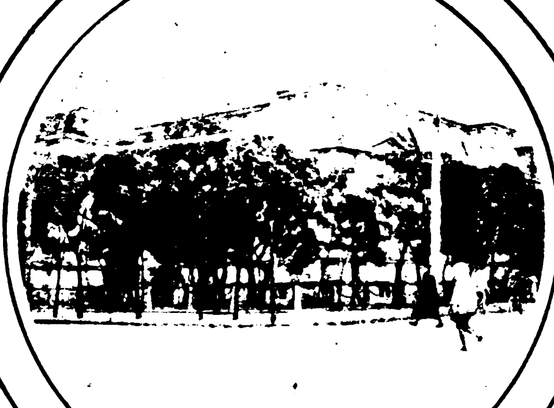
CUBA, PORTO RICO, DOMINICAN REPUBLIC, HAITI, COSTA RICA, BR. HONDURAS, BRITISH WEST INDIES and FRENCH WEST INDIES

617 Branches throughout CANADA & NEWFOUNDLAND

LONDON Princes St., E.C.
PARIS 28, Rue du Quatre-Septembre.
NEW YORK 68, William St.
BARCELONA Plaza de Cataluna 6.

THE ROYAL BANK OF CANADA

CAPITAL PAID UP & RESERVES $40,000,000
TOTAL RESOURCES OVER - $600,000,000



THE BANK OF TAIWAN LTD.

INCORPORATED BY SPECIAL IMPERIAL CHARTER, 1899

Capital Subscribed - - - - - - -	Yen 60,000,000
Capital Paid-up - - - - - - - -	,, 45,000,000
Reserve Funds - - - - - - - -	,, 9,680,000

President: KOJURO NAKAGAWA, Esq. Vice-President: SHUNROKURO MORI, Esq.

DIRECTORS:

TSUNEKICHI IKEDA, Esq. KUMEMATSU MORINAGA, Esq.
GUNJI KAWASAKI, Esq. MASUMI ESAKI, Esq.
TADASU HISAMUNE, Esq.

***Head Office:* TAIPEH, FORMOSA (TAIWAN)**

BRANCHES:

JAPAN: Tokio (General Affairs Department), Kobe, Moji, Osaka, Yokohama.
TAIWAN: Keelung, Tainan, Takow, and 11 other points.
CHINA: Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
OTHERS: Bangkok, Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

AGENTS AND CORRESPONDENTS:

In the Principal Cities and Towns throughout the World.

LONDON BANKERS:

BARCLAYS BANK, LTD. LLOYDS BANK, LTD. LONDON COUNTY WESTMINSTER & PARR'S BANK, LTD.

TOKYO BRANCH:

No. 1, Eiraku-cho Ni-chome, Kojimachi-ku.

Telegraphic Address: "TAIWANGINK."

Phone Nos. 1060, 1061, 1062, 1063, 1064, 1065, 1066, 446, 447, 448 and 449, Marunouchi.

Interest allowed on Fixed Deposits, and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts.

Every description of Exchange and General Banking business transacted.

Special facilities are available for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

Banque Industrielle de Chine

CAPITAL AUTHORIZED - - - - - - -	Frs. 250,000,000
CAPITAL SUBSCRIBED - - - - - - -	,, 150,000,000
CAPITAL PAID-UP - - - - - - - -	,, 75,000,000
RESERVES - - - - - - - - - - -	,, 40,000,000

One-third of the Capital, i.e., Francs 50,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese Republic on the 11th January, 1913.

President: ANDRE BERTHELOT

General Manager: A. J. PERNOTTE

HEAD OFFICE: 74 RUE SAINT LAZARE, PARIS.

Branches:

ANTWERP
BATAVIA
BORDEAUX
CANTON
DUNQUERQUE
FOOCHOW
HAIPHONG
HANKOW
HANOI
HONGKONG
LE HAVRE
LONDON
LYONS
MARSEILLES
MUKDEN
NEW YORK
PEKING
PNOM PENH
ROTTERDAM
SAIGON
SHANGHAI
SINGAPORE
SWATOW
TIENTSIN
TSINANFU
VLADIVOSTOCK
YOKOHAMA
YUNNANFU

BANKERS:

IN LONDON: The London Joint City and Midland Bank, Ltd., London.

IN FRANCE: Societe Generale pour favoriser le Developpement du Commerce & de l'Industrie en France.

IN ITALY: Banca Commerciale Italiana. Credito Italiano.

TAELS, DOLLARS, GOLD ACCOUNTS

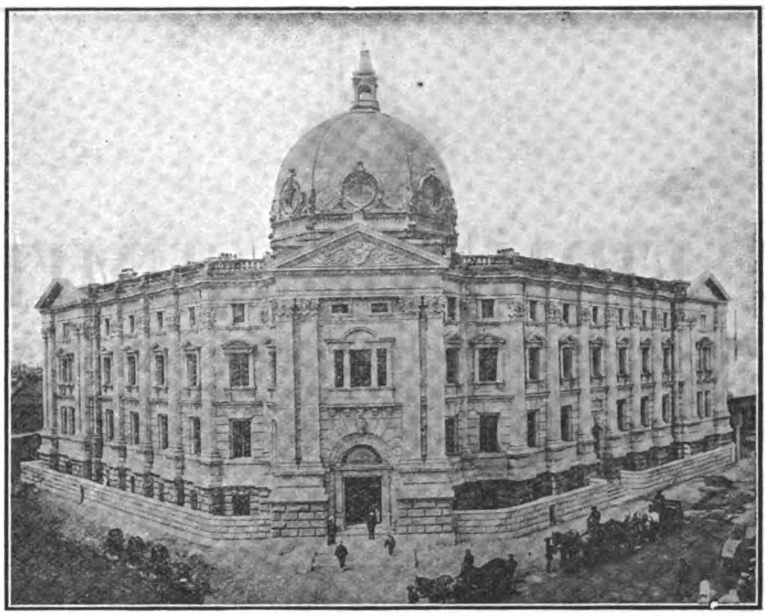
Interest allowed on current accounts in Gold or local currency.
Savings account and fixed deposits. Terms on application.
Every description of Banking and Exchange business transacted.

B. ADAM, *Manager*.

1 French Bund, Shanghai.

Capital (Fully Paid-Up):
Yen 100,000,000

Reserve Fund:
Yen 53,000,000



HEAD OFFICE, YOKOHAMA

CORRESPONDENTS
AT ALL
THE CHIEF
COMMERCIAL CITIES
IN THE WORLD

The Yokohama Specie Bank, Ltd.

Established 1880

DIRECTORS:

President: NAKAJI KAJIWARA, Esq.
Vice-President: SHIMAKICHI K. SUZUKI, Esq.
NAGATANE SOMA, Esq.
YUKI YAMAKAWA, Esq.
MASNOSKE ODAGIRI, Esq.
BARON KOYATA IWASAKI
KONOJO TATSUMI, Esq.
FUKUSABURO WATANABE, Esq.
IWAO MATSUKATA, Esq.
MORINOSUKE MITSUI, Esq.
BARON KAISAKU MORIMURA
REITARO ICHINOMIYA, Esq.
KENJI KODAMA, Esq.
KIMPEI TAKEUCHI, Esq.
TARO HODSUMI, Esq.

Head Office: YOKOHAMA
Manager: H. MORI., Esq.

TOKYO BRANCH
No. 1, Itchome, Eirakucho, Kojimachi-ku.
Manager: K. MOGAMI, Esq.

BRANCHES AND AGENCIES.

Batavia	Dairen	Hongkong	Los Angeles	Nagasaki	Rangoon	Shanghai	Saigon
Bombay	Fengtien	Honolulu	*(sub-office of San Francisco*	Newchwang	Rio de Janeiro	Shimonoseki	Tientsin
Buenos Aires	Hamburg	Kaiyuang	*Branch)*	New York	Saigon	Singapore	Tsingtau
Calcutta	Hankow	Kobe	Lyons	Osaka	San Francisco	Sydney	Tsinan
Changchun	Harbin	London	Manila	Peking	Seattle	Sourabaya	Vladivostock

LONDON BANKERS

LLOYD'S BANK, LIMITED
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LIMITED
NATIONAL PROVINCIAL AND UNION BANK OF ENGLAND, LIMITED
LONDON JOINT CITY AND MIDLAND BANK, LIMITED

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted.
For particulars, apply to the managers.

THE FIRM OF SUMITOMO

OWNERS OF BESSHI COPPER MINE, COAL MINE, ETC.

MANUFACTURERS OF

Tubes, Plates, Sheets and Bars of Copper Brass, Bronze and other Copper Alloys, Solid Drawn Steel Tubes, Nails, Electric Wires and Cables, Artificial Fertilizer, etc.

WORKS AND DEPARTMENTS

General Head Office	Osaka
Besshi Copper Mine Office	Niihama, Iyo
Copper Sales Department	Osaka & Kobe
Warehouses	Osaka, Kobe & Toyko
Wakamatsu Coal Department	Wakamatsu, Chikuzen
Copper Works	Osaka & Amagasaki
Electric Wire and Cable Works	Osaka
Fertilizer Manufactory	Niihama, Iyo
Sapporo Mine Office	Sapporo, Hokkaido
Tokyo Sales Department	Tokyo
Kure Sales Department	Kure near Hiroshima
Yokosuka Sales Department	Yokosuka
Hakata Sales Department	Hakata
The Sumitomo Yoko	Shanghai
The Sumitomo Yoko	Hankow
The Sumitomo Yoko	Tientsin
The Sumitomo Bank of Hawaii	Honolulu
The Sumitomo Bank of Seattle	Seattle

THE SUMITOMO STEEL WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of every description for Railways, Shipbuilding Yards, Mines, Hydraulic, Electric and other Engineering Works, etc. etc.

THE SUMITOMO BANK, LIMITED

OSAKA, JAPAN

Cable Address: "SUMITBANK"

President: Baron K. SUMITOMO

Capital Subscribed	Yen 70,000,000	Reserve Fund	Yen 12,000,000
Capital Paid-up	,, 40,000,000	Deposits (30th June, 1920)	„ 360,000,000

HOME BRANCHES:

Tokyo, Yokohama, Nagoya, Kyoto, Kobe, Hyogo, Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Kokura, Wakamatsu, Hakata, Kurume.

FOREIGN OFFICES:

New York, San Francisco, Shanghai, Hankow, Bombay, London, Seattle (Affiliated Bank), Hawaii (Affiliated Bank).

AGENTS:

National City Bank of New York, New York. Lloyds Bank Ltd., London.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.

THE

MITSUBISHI BANK, LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku, Tokyo, Japan.

BRANCH OFFICES:

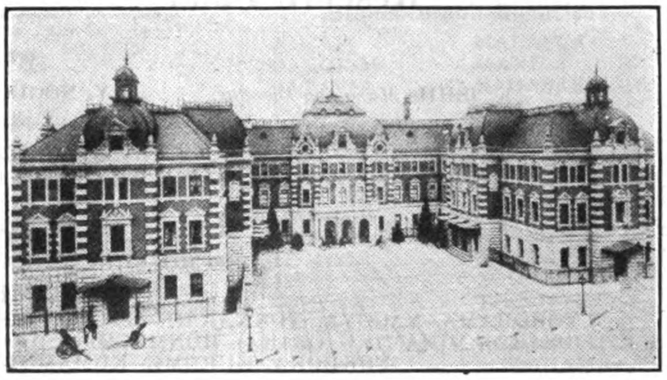
Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1680



Capital Subscribed............................Y. 100,000,000.00
Capital Paid-Up..............................Y. 60,000,000.00
Reserve Fund (Jan. 1921)......Y. 27,000,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku, TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

MORINOSUKE MITSUI, Esq., TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

OTARU, FUKAGAWA (Tokyo), HAKOZAKI (Tokyo), YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London: Barclays Bank, Ltd.
London Joint City & Midland Bank, Ltd.
New York: The National City Bank of New York.
The Chase National Bank.
Bankers Trust Co.
Paris: Banque de l'Union Parisienne.
Comptoir National d'Escompte de Paris.
Bombay: National Bank of India, Ltd.

THE DAI-ICHI GINKO, LTD.

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Subscribed Capital - - -	Yen 50,000,000.00
Paid-Up Capital - - - -	Yen 29,525,000.00
Reserve Fund - - - -	Yen 28,000,000.00

Y. SASAKI, *President*

K. ISHII, *Managing Director.* Y. NOGUCHI, *Managing Director.* S. SUGITA, *Managing Director.*

HEAD OFFICE:

No. 1 KABUTO-CHO, NIHONBASHI-KU, TOKYO.

T. AKASHI, *Manager*

CITY BRANCHES:

ISECHO, SHIN-OSAKACHO, FUKAGAWA, MARUNOUCHI.

HOME BRANCHES:

YOKOHAMA, NAGOYA, YOKKAICHI, KYOTO, NISHIJIN (KYOTO), GOJO (KYOTO), FUSHIMI, OSAKA, NISHIKU (OSAKA), MINAMIKU (OSAKA), HONMACHI (OSAKA), KOBE, HYOGO, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, MURORAN.

BRANCHES IN COREA:

SEOUL, FUSAN.

LONDON & NEW YORK BANKERS:

London: London County Westminster & Parr's Bank, Ltd.; The London Joint City & Midland Bank, Ltd.; The Yokohama Specie Bank, Ltd.

New York: The National City Bank of New York.; The National Bank of Commerce in New York.; The Yokohama Specie Bank, Ltd.

CORRESPONDENTS:

The Bank, in addition to its own Branches, has numerous Agencies or Correspondents in the principal Cities and Towns at Home and Abroad.

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Capital fully paid up	P. 6,750,000.00
Reserve funds	P. 4,900,000.00

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

LONDON: National Bank of Scotland, Ltd.
SPAIN: Banco Hispano-Americano
HONGKONG: Netherland India Commercial Bank
SAN FRANCISCO: Wells Fargo Nevada National Bank
NEW YORK: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.
PARIS: Comptoir National d'Escompte
AUSTRALIA: Bank of New South Wales
SHANGHAI: Bank of Canton, Ltd.
CHICAGO: Continental & Commercial National Bank
JAPAN: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, *President*

No. 10 PLAZA DE CERVANTES, MANILA, P. I.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	$15,000,000
Reserve Funds: Sterling	£2,500,000
Silver	$21,500,000
Reserve Liability of Proprietors	$15,500,000

Court of Directors:

G. T. M. EDKINS, Esq.
Chairman

G. M. DODWELL, Esq.
Deputy Chairman

D. G. M. BERNARD, Esq.
A. S. GUBBAY, Esq.
Hon. Mr. P. H. HOLYOAK
A. O. LANG, Esq.
Hon. Mr. E. V. D. PARR
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.
H. P. WHITE, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . . Hon. Mr. A. G. STEPHEN

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY, BANGKOK, BATAVIA, BOMBAY, CALCUTTA, CANTON, COLOMBO, FOOCHOW, HANKOW, HARBIN, ILOILO, IPOH, JOHORE, KOBE, KUALA LUMPUR, LONDON, LYONS, MALACCA, MANILA, NAGASAKI, NEW YORK, PEKING, PENANG, RANGOON, SAIGON, S. FRANCISCO, SHANGHAI, SINGAPORE, SOURABAYA, TIENTSIN, TSINGTAO, VLADIVOSTOCK, YOKOHAMA

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

Managing-Directors:
YUTSUHA SATO, Esq.
KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
MARQUIS YORIMICHI TOKUGAWA
VISCOUNT YUKIYOSHI AOYAMA
HON. NAGAYUKI ASANO
YOSHITERU SHIMIZU, Esq.
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
BARON MICHITOMO IWAKURA
NAOYOSHI YAMAMOTO, Esq.
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

***Head Office Manager:* Kiyosumu Tanikawa, Fsq.**

LONDON BANKS AND AGENTS:

LAZARD BROTHERS & CO., LTD.
UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LTD.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED	- - - - -	Yen 50,000,000
CAPITAL PAID-UP	- - - - - - -	Yen 45,000,000

HEAD OFFICE:

MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:

TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
Y. ONO, Esq., Vice-President
K. IYANAGA, Esq., Director
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:

NAGATANE SOMA, Esq.
KINTARO HATTORI, Esq.
KINICHI KAWAKAMI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

Cable Address:
"IWASAKISAL-
TOKYO"

Code Used:
A. 1., A.B.C. 5th, Western
Union, Bentley's Complete
Phrase

MITSUBISHI SHOJI KAISHA, LD.

(MITSUBISHI TRADING CO., LTD.)

Capital, fully paid-up - - - Y. 15,000,000

Head Office:

MARUNOUCHI, TOKYO.

Importers and Exporters, Manufacturers, Commission Merchants, Brokers, Ship Owners.

EXPORTING:

Coal, Copper and all Other Descriptions of Metals, Minerals and Cereals, Chemicals, Oil, Paper, Glass, Canned Fish, Silk Goods, and General Oriental Products and Merchandise

IMPORTING:

Iron, Steel, Machinery, Machine Tools, Chemicals, and General Merchandise

ANNUAL PRODUCTION:

Electrolytic Copper Ingots	20,000	Tons
Pig Iron	100,000	,,
Steel	50,000	,,
Coal	3,500,000	,,

COLLIERIES:

Takashima, Ochi, Yoshinotani, Kishidake, Namazuta, Shinnew, Hojo, Kanada, Kamiyamada, Ashibetsu, Bibai, O-Yubari, and Sakito

BRANCHES and AGENCIES:

Tokyo, Yokohama, Nagoya, Osaka, Kobe, Moji, Wakamatsu, Karatsu, Nagasaki, Otaru, Tsuruga, Kure, Muroran, Hakodate, Kushiro, Vladivostok, Dairen, Kirin, Harbin, Peking, Shanghai, Hankow, Hongkong, Canton, Tientsin, Tsingtao, Tsinan, Singapore, London, Paris, Lyon, Marseilles, Berlin, New York, Seattle.

STEAMSHIP DEPARTMENT—KOBE

Fleet Owned	25,000	Tons Gross
Chartered Steamers	12,000	,, ,,

Regular and Irregular Routes between home ports and Chinese and South Sea Islands Ports, etc.

AMERICA-JAPAN-CHINA TRUST COMPANY, LIMITED

HEAD OFFICE:

6 Nakabashi Izumicho, Kyobashi-ku, Tokyo.

BRANCH OFFICE:

11 Imabashi Nichome, Higashiku, Osaka.

CAPITAL - - Y. 50,000,000.00

Directors:

Michitaka Sugawara, *Chairman*
Seiji Nawa, *Managing Director*
Toyotsune Mikami
Count Kinjiro Hirosawa
Wu Ting Chang
Kenji Imanishi, *Managing Director*
Taiji Arai
Seishichi Iwasaki
Saburosuke Fujisaki
F. N. Shea

Auditors:

Kanzo Matsuo, Standing
Toyohiko Kuki
Motosaburo Kaneko
Takayoshi Kondo

Councillors:

Raizo Kanda
Katsutaro Kamada

***Principal Business of this Company as follows*:**

1. Financing of Domestic and Foreign Enterprises.
2. Underwriting Public Bonds, Debentures and other Securities.
3. Guaranteeing Loans, Debts and Credits.
4. Issuing Letters of Credit and Accepting Bills.
5. Assisting in the Organization of various enterprises and in the financial re-adjustment of Companies.
6. All other kinds of Trust Business.

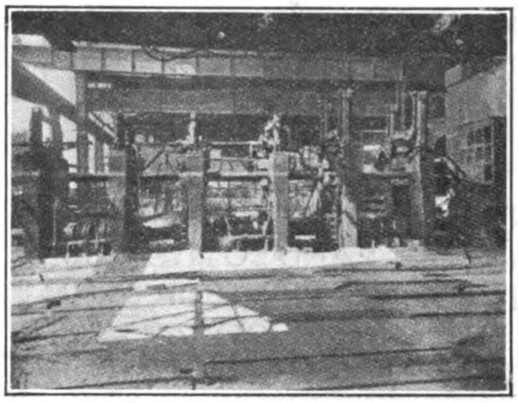
DORMAN, LONG & Co., Ltd.

Steel Manufacturers,
Bridge Builders & Constructional Engineers,

MIDDLESBROUGH, ENGLAND.

Telegraphic Address:
"DORMAN-MIDDLESBROUGH."

Codes:
BENTLEY'S; A.B.C. (5th and 6th Editions) and WESTERN UNION (Universal & 5 Letter).

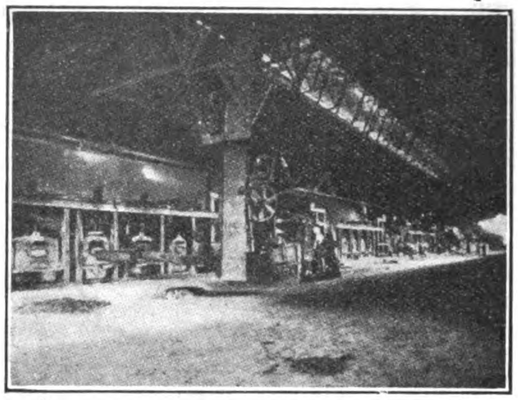


Britannia Steelworks,
MIDDLESBROUGH.

Open-Hearth STEEL JOISTS, ANGLES and OTHER SECTIONS, RAILS.

Open-Hearth STEEL BARS in long lengths suitable for

FERRO-CONCRETE WORK, BILLETS AND BLOOMS.



Redcar Iron and Steel Works, Redcar.

Steel Works and Rolling Mill Dept.
Plate Mills capable of Rolling all Plates for **Shipbuilding and Engineering** purposes, from $\frac{3}{16}''$ to $1\frac{1}{2}''$ thick, fulfilling the requirements of British Standard Tests, Board of Trade, Admiralty, Lloyds, etc.
Universal Plates with Rolled Edges 12" to 42" wide up to 90-ft. long.

Clarence Steel Works and Rolling Mills,
PORT CLARENCE.

High-class Steel in quality from Dead Soft to 1.25 per cent. Carbon for the manufacture of Wire, Springs, Files, Saws, Forgings, Stampings, Rifle Barrels, Agricultural Implements, etc. Conductivity Steel to stand General Post Office, India Office and British Railway Tests.
Electrically Melted Steels of all Carbons.

NICKEL ALLOY STEEL.
Flange and Bulb Head Rails, Billets, Slabs, etc.

Ayrton Rolling Mills,
MIDDLESBROUGH.

Galvanized Corrugated and Plain Sheets,

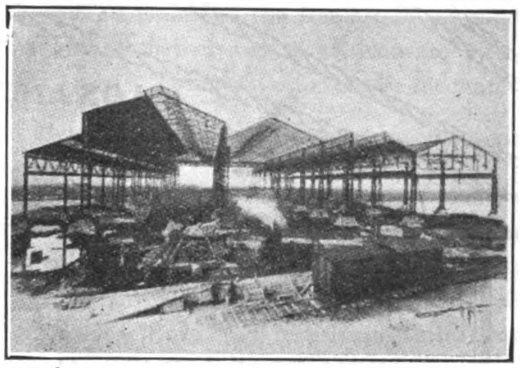
Ridging, Gutters, Downpipes, Fountain Heads, etc.

Ordinary Galvanized Fittings kept in Stock.

Cleveland Wire Mills,
MIDDLESBROUGH.

Wire Rods and all kinds of Wire for all purposes. Telegraph & Telephone Wire. Annealed Core Wire. Galvanized Seizing Wire. Galvanized Rigging Wire. Galvanized & Varnished Fencing Wire. Galvanized Strand & Barb Wire. Galvanized Cable Wire.

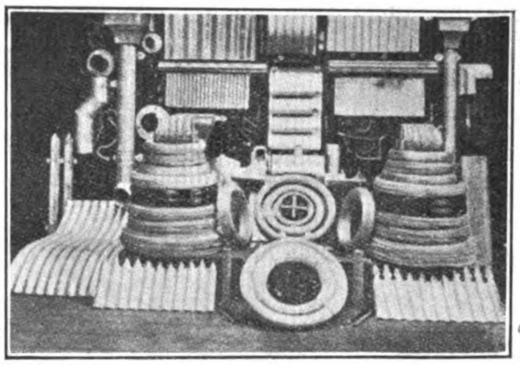
Galvanized Patent Steel Hawser Wire to Lloyd's Tests.
Bright Patent and Plough Steel Rope Wire.
The Mills can supply the **longest single length** of Rods or Wire without weld or joint of anyone in the Trade.



Constructional Department,
MIDDLESBROUGH.

STRUCTURAL STEELWORK
for all purposes.

Speciality:
STEEL FRAME BUILDINGS
for home and abroad.



AGENTS:—
REPRESENTATION for BRITISH MANUFACTURERS, LTD.

CHING MING BUILDINGS, BRITISH CONCESSION, HANKOW.
43 KIANGSE ROAD, SHANGHAI.
REGINES BUILDINGS, LEGATION STREET, PEKING.

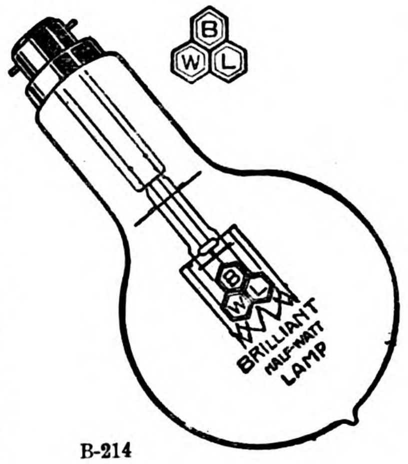
BRILLIANT Half Watt LAMPS

give MORE LIGHT, BETTER LIGHT at LESS COST than any vacuum lamp.

Call at our Show Room Nanking corner Honan Roads and we'll convince you.

THE BRILLIANT ELECTRIC CO.

Dependable Suppliers of Everything Electrical.



博利安半華德電泡
加倍光明減半電費

博利安電料公司
上海英大馬路抛球場
電話中央四九〇七

B-214

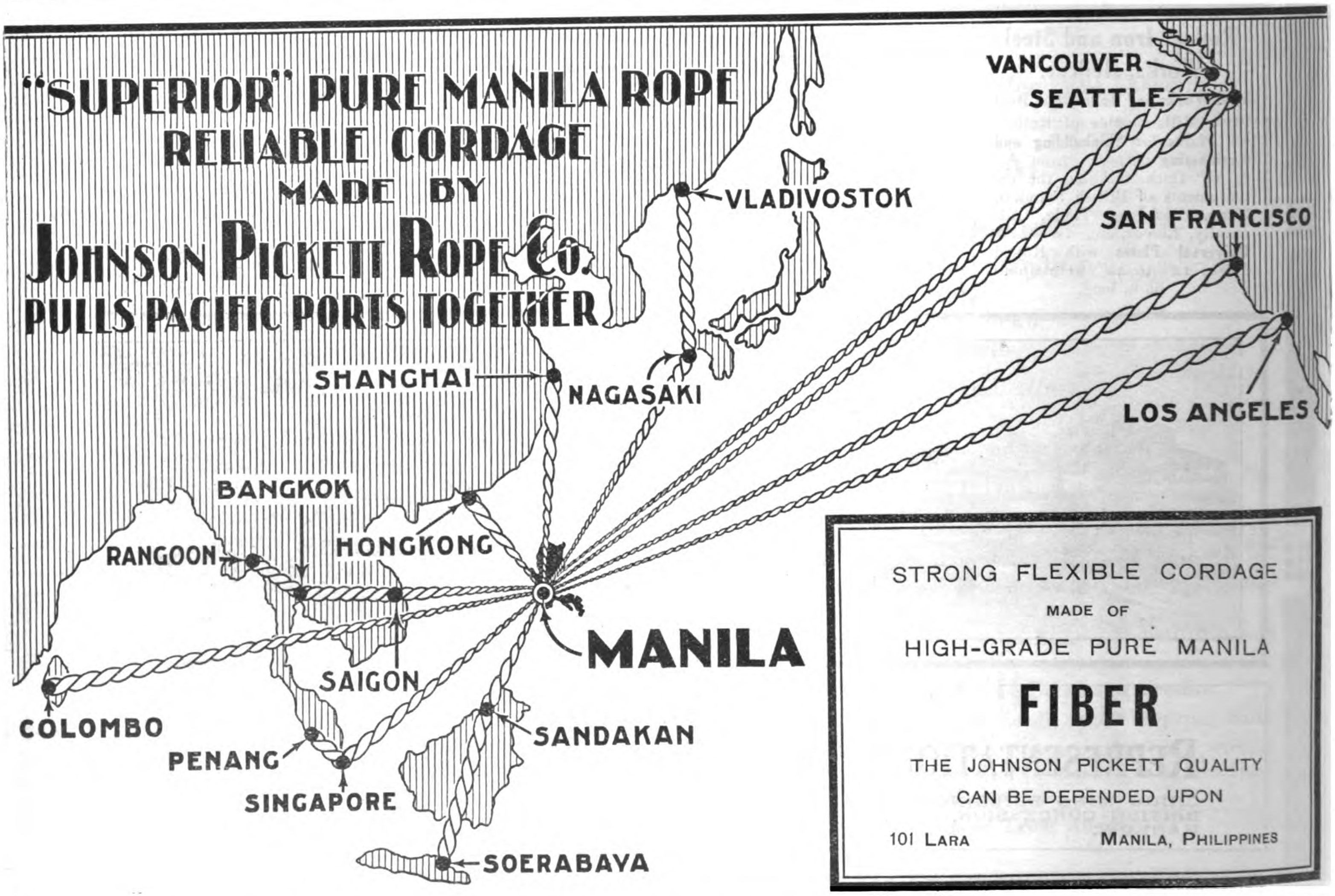
MITSUBISHI MARINE & FIRE INSURANCE Co., Ltd.

MITSUBISHI KAIJO KASAI HOKEN K. KAISHA

Head Office:
MARUNOUCHI, TOKYO

Subscribed Capital - -	Yen 5,000.000
Paid-up Capital - - -	„ 1,250.000

Branches and Agencies:
LONDON, NEW YORK, OSAKA, KOBE, SHANGHAI, AND OTHER IMPORTANT CITIES AND PORTS IN THE WORLD



A Real Machine Tool

This Wall Radial Drill is a real machine tool in every sense of the word. It is properly designed and carefully constructed of the finest materials obtainable. Every feature has been added to insure ease of operation and accurate output. Your factory walls from the column of this machine and it proves as rigid under strain as any machine on the floor.

You save in first cost, floor space and operating time by insisting on L-F Wall Radial Drills.

Get the full details from bulletin. They make interesting reading.

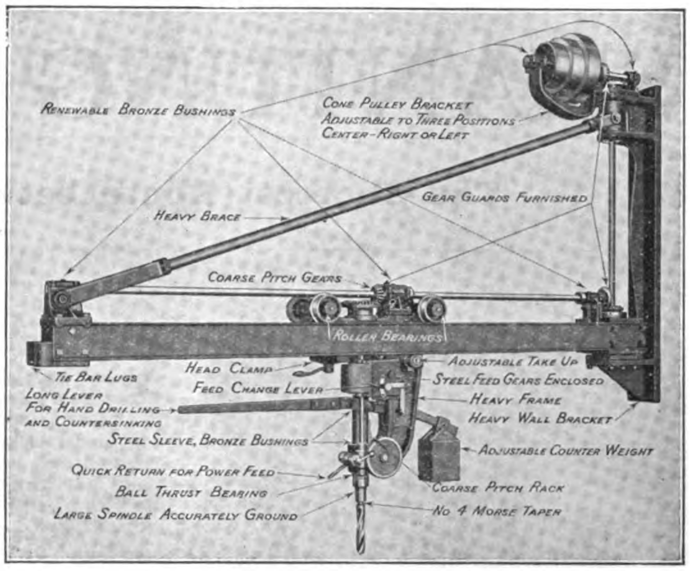
GET IT TO-DAY.

LYND-FARQUHAR CO.

Machine Tools of Quality.

419-425 ATLANTIC AVE.,

Boston 9, Mass., U.S.A.



MADE IN FOUR STANDARD SIZES

Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

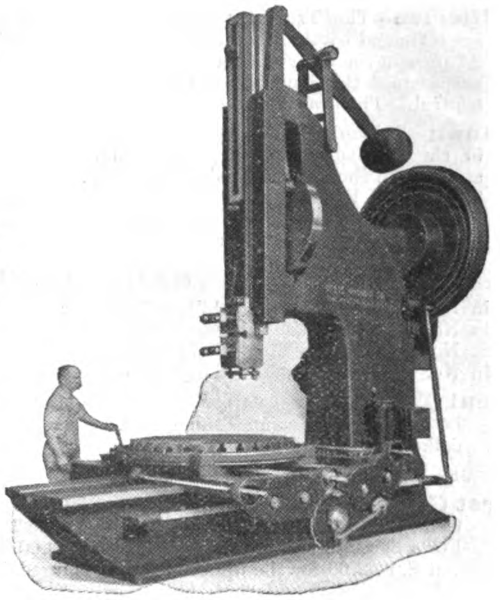
Other lengths of arm to suit requirements.

BETTS HEAVY DUTY VERTICAL CRANK DRIVEN SLOTTING MACHINE

The adaptability of a Betts Slotting Machine is apparent on inspection.

Owlng to the centralized control the operator can watch the cutting tool as well as command the free use of all handles, standing in one position. This makes for better and more accurate work and is less onerous on the operator. Betts Tools make for better mechanics with less labour.

A Betts Machine Tool for every need in heavy duty work.—Let us have your problems.



Engine Lathes, Axle Lathes, Journal Trueing Lathes, Vertical Boring and Turning Mills, Tire Turning and Boring Mills, Horizontal Boring Machines, Planing Machines, Slotting Machines, Multiple Spindle Milling Machines and Munition Manufacturing Machines.

Cable Address "Betts" Rochester

BETTS MACHINE COMPANY

405 WINTON ROAD, ROCHESTER NEW YORK, U. S. A.

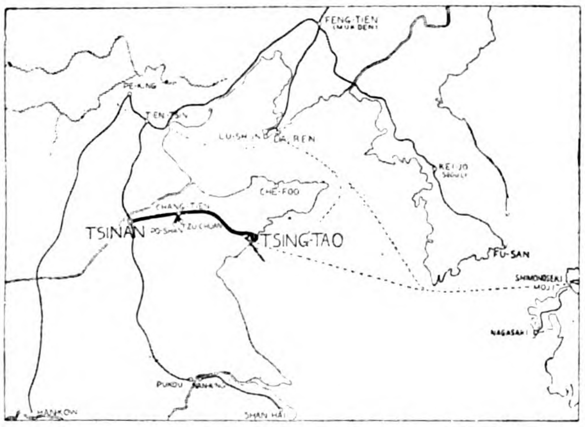
Established in 1861

ANDERSEN, MEYER & CO., LTD., Shanghai, China

Exclusive Representatives for China and Manchuria

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 9.30 p.m. arrives Tsingtao 9.10 a.m.

Local Trains run between Tsingtao and Kaohi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

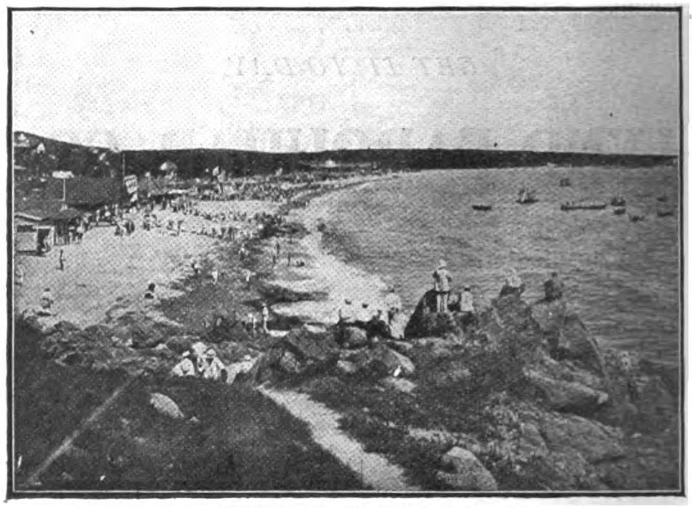
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.43 & 10.21 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

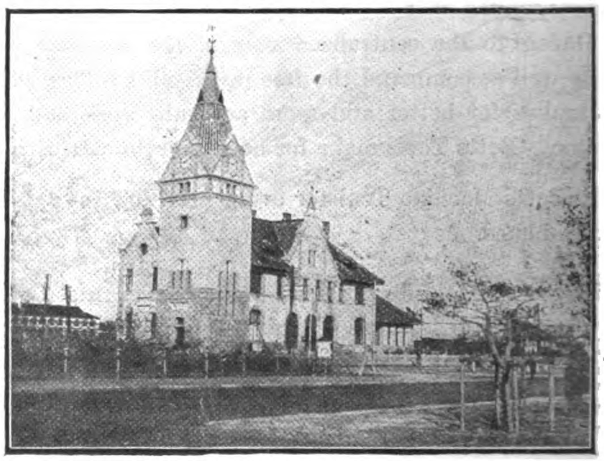
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



TSINGTAU STATION

For Further Information, please apply to

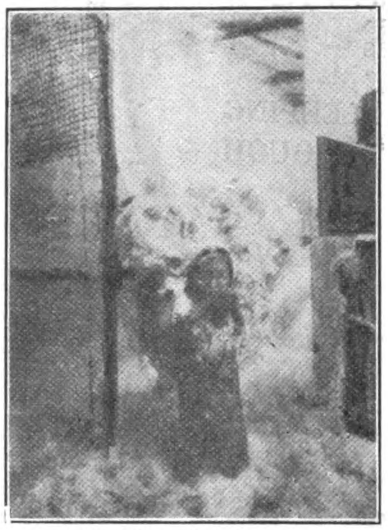
THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

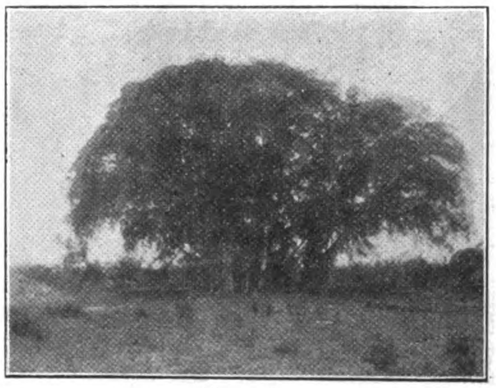
CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & Al.

JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA?
IF NOT, DO SO NOW!

Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.


Girl Carrying Capoc.


Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

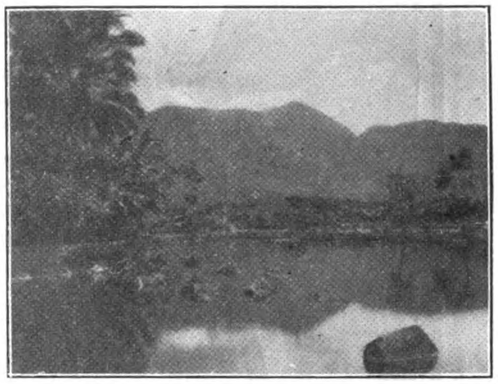
And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

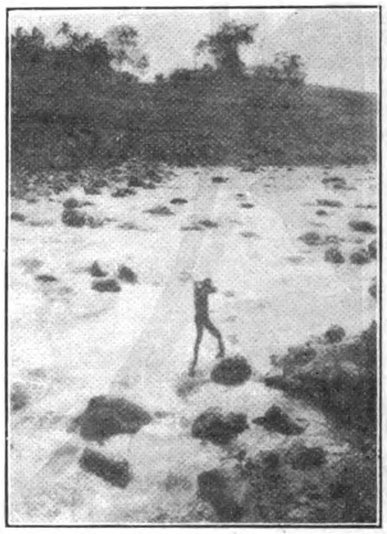
Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

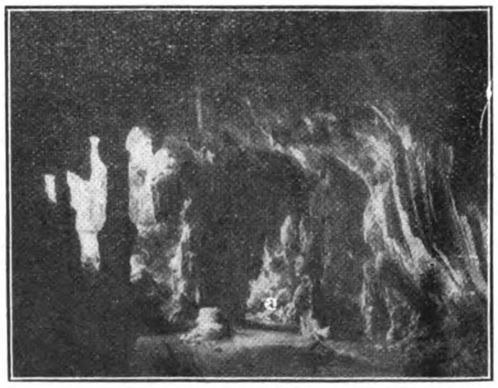
THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.


Pond in the Neighborhood of Garoet.

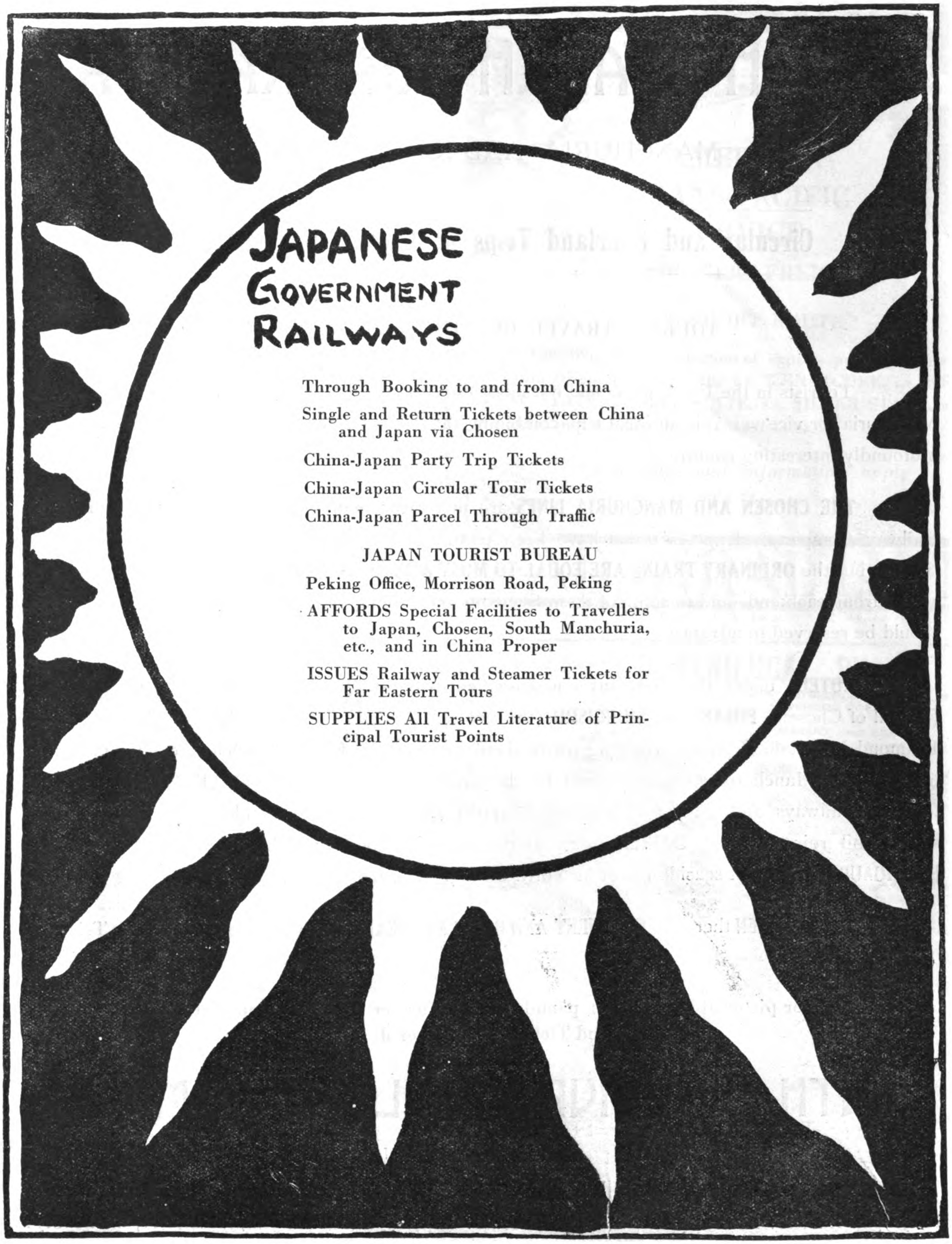

River Brantas, Malang.


Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

The photographs in this advertisement are from "The Joint-Stock Co., Photographer's Studio, Kurkdjian, Soerabaia."

JAPANESE
GOVERNMENT
RAILWAYS
THOROUGHLY EQUIPPED LINES REACH EVERY PLEASURE RESORT AND BUSINESS POINT
Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes
WELL-FURNISHED PASSENGER CARS WITH SLEEPING AND DINING ACCOMMODATION ON THROUGH TRAINS AND EXPRESSES
OFFICIAL GUIDE TO EASTERN ASIA
Sold at Kelly and Walsh (Shanghai); Offices of Japan Tourist Bureau (Peking, etc.)
Sold at the Philippine Educational Co. (Manila)


JAPANESE
GOVERNMENT
RAILWAYS
Through Booking to and from China
Single and Return Tickets between China and Japan via Chosen
China-Japan Party Trip Tickets
China-Japan Circular Tour Tickets
China-Japan Parcel Through Traffic
JAPAN TOURIST BUREAU
Peking Office, Morrison Road, Peking
AFFORDS Special Facilities to Travellers to Japan, Chosen, South Manchuria, etc., and in China Proper
ISSUES Railway and Steamer Tickets for Far Eastern Tours
SUPPLIES All Travel Literature of Principal Tourist Points

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

MIIKE COAL

The Finest Steaming and Bunker Coals of the Far East are mined from the famed Miike, Tagawa, Yamano, Sunakawa and Kawakami Collieries operated by the

MITSUI

MINING COMPANY, LTD.

HEAD OFFICE:
No. 1 Surugacho, Nihonbashi-Ku,
TOKYO, JAPAN

Capital - - Yen 100,000,000

Annual Coal Output is equal to one-quarter of Total Japanese Mines.

LEAD, SILVER, GOLD, ZINC, COPPER, SPELTER, SULPHUR, COKE, IRON, CHEMICALS and DYES

Are produced from the Company's, KAMIOKA, Lead, Silver and Zinc Mine; SANO, Copper and Zinc Mine; KUSHIKINO, Gold Mine; KONGO, Tungsten Mine; IWAONOBORI, Sulphur and Metal Mine; Zinc Plants, Coke, Dyestuffs and By-products Establishments in Miike.

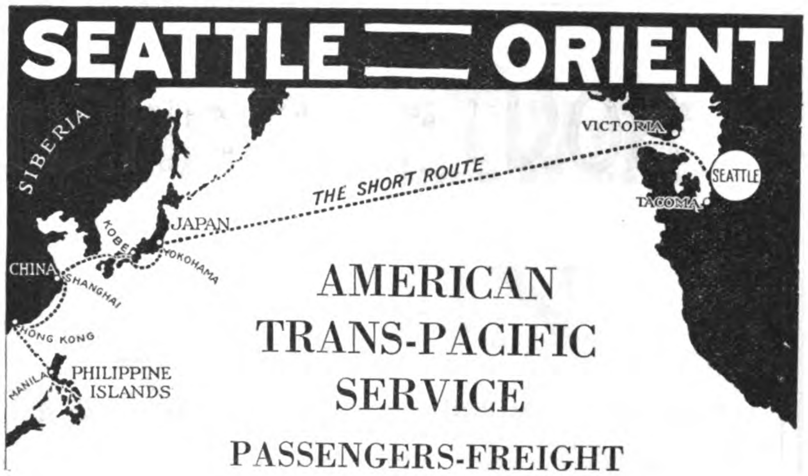
Sole Agents for our Products:

MITSUI BUSSAN KAISHA, Ltd.

(MITSUI & Co., Ltd.)

Tokyo, London, New York, Shanghai, Hongkong, and other Principal Commercial Centres of the World.

SEATTLE — ORIENT



AMERICAN TRANS-PACIFIC SERVICE

PASSENGERS-FREIGHT

"THE SHORT ROUTE"

ANNOUNCING the inauguration of express passenger service from Oriental Ports of the s.s. WENATCHEE, s.s. KEYSTONE STATE, s.s. BAY STATE, s.s. SILVER STATE, and one additional steamer to be named later.

For rates and information apply To Agents

THE ADMIRAL LINE P.S.S.CO.

The ADMIRAL LINE

ANYWHERE ON THE PACIFIC

PACIFIC STEAMSHIP COMPANY

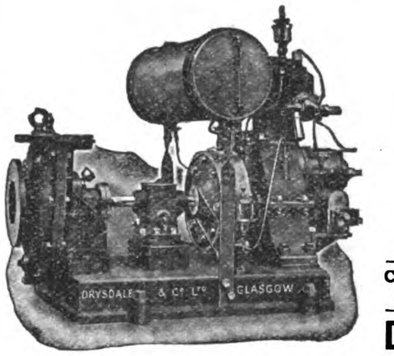
"BON ACCORD" **CENTRIFUGAL PUMPS**

Self-Lubricating Centrifugal PUMPING ENGINES.

MARINE and LAND TYPES for all DUTIES.

HIGH SPEED ENGINES for driving DYNAMOS, FANS, ETC.

Try "Bon Accord" Packing for the Stuffing Boxes of your Pumps and Engines.



CONTRACTORS TO THE BRITISH AND FOREIGN ADMIRALTIES.

DRYSDALE & CO., LTD.,
YOKER, GLASGOW, SCOTLAND.

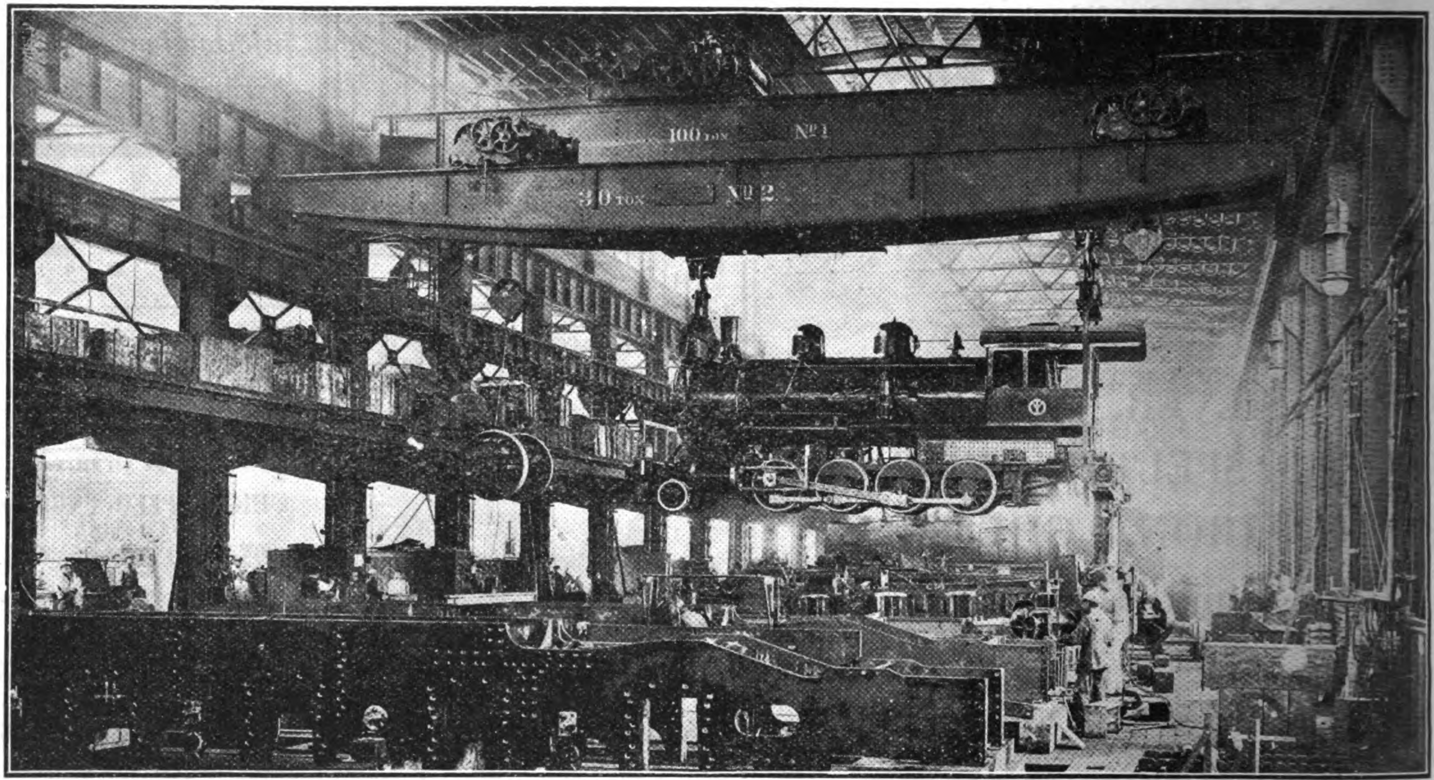
We accept facts.
Face them dispassionately.
Fairly comment upon them.
Why ?
They affect trade !

FAR EASTERN REVIEW

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

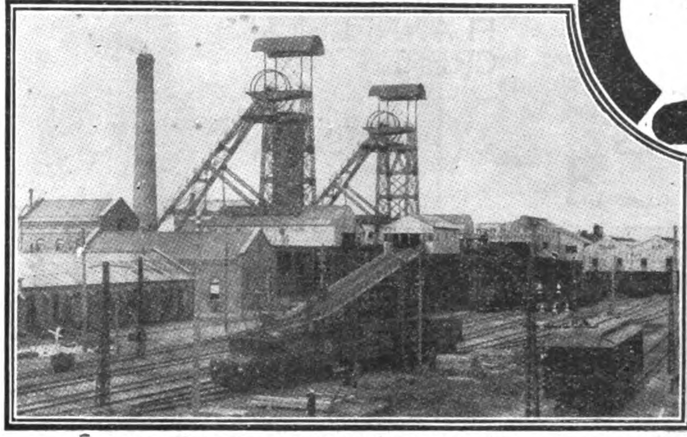
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

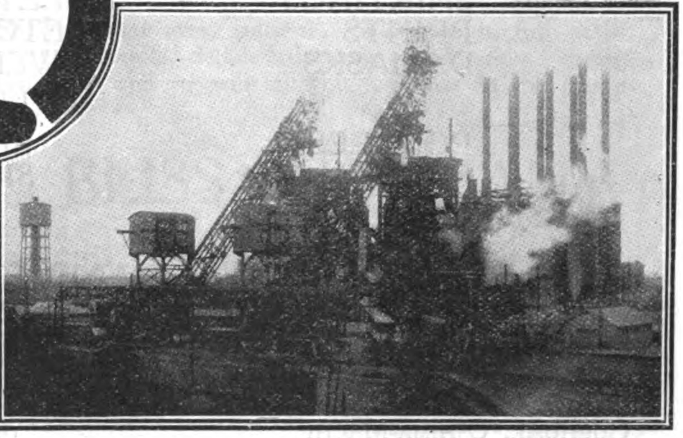
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

Dairen	Port Arthur	Newchwang (Yingkou)
	Tientsin	Tsingtao

Agencies:

Chefoo	Takao (Formosa)	Osaka
Manila		Nagoya
Hongkong	Batavia	Shanghai
Sourabaya	Yokohama	Moji
Singapore	South Seas	Saigon
Penang	Niigata	etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,

South Manchuria Railway Company, Dairen

ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

BUT THE TWAIN HAS MET AND BLENDED HERE

JAPANESE TEXTILES FOR EXPORT

Standard Printed and Dyed Cotton and Silk Fabrics

SHIRTINGS
PRINTS
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ETC. ETC.

PONGEES
CREPES
BROCADES
SILKS
SATINS

FUJI GASSED SPINNING COMPANY, LIMITED

(FUJI GASU BOSEKI KABUSHIKI KAISHA)

Head Office:
GOCHOME, OSHIMA-MACHI
NEAR TOKYO
CABLE ADDRESS: "FUHO"

CAPITAL - - Yen 38,000,000
OPERATING
450,000 Spindles and
1,775 Looms

Business Office:
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SILK AND COTTON YARNS, NOILS, etc.

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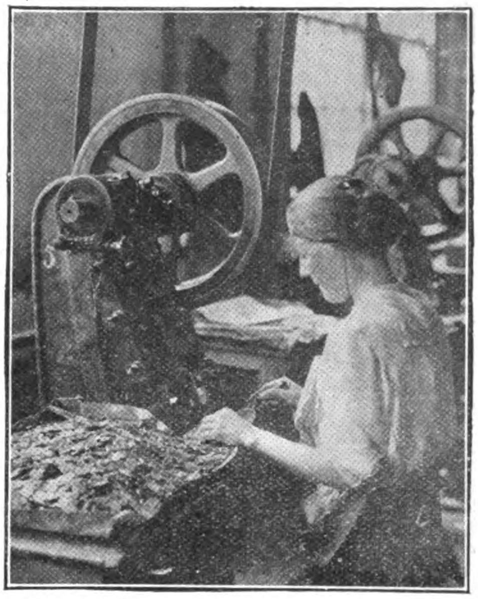
IS REPRESENTED IN ALL THE IMPORTANT COMMERCIAL CENTERS OF THE WORLD AND CAN FURNISH PROMPTLY FULL INFORMATION AND QUOTATIONS REGARDING THE LARGE VARIETY OF TEXTILES MADE IN OUR MILLS

KANEGAFUCHI SPINNING COMPANY, LIMITED

HIGASHI-SHIRIIKE, KOBE, JAPAN

A PERSONAL INTRODUCTION



is here given you to a BLISS No. 18 Inclinable Press in operation in the plant of the Griest Manufacturing Company of New Haven, Conn., U.S.A. This press was installed twelve years ago and has never failed to give satisfactory service.

You are looking at an operator repunching sewing-machine attachment pendulums. She is pressing these out of cold-rolled steel, 0.065 stock, at the rate of 18,000 every 9½ hours.

There's a BLISS Press for every purpose. Write us, in full detail, of *your* particular needs (send sample, detailed drawing or blue-print; specify material, rate of production, etc.) and we will tell you just what BLISS Equipment you should have.

E. W. BLISS COMPANY

22 JOHN STREET BROOKLYN, N.Y., U.S.A.

EUROPEAN OFFICES:

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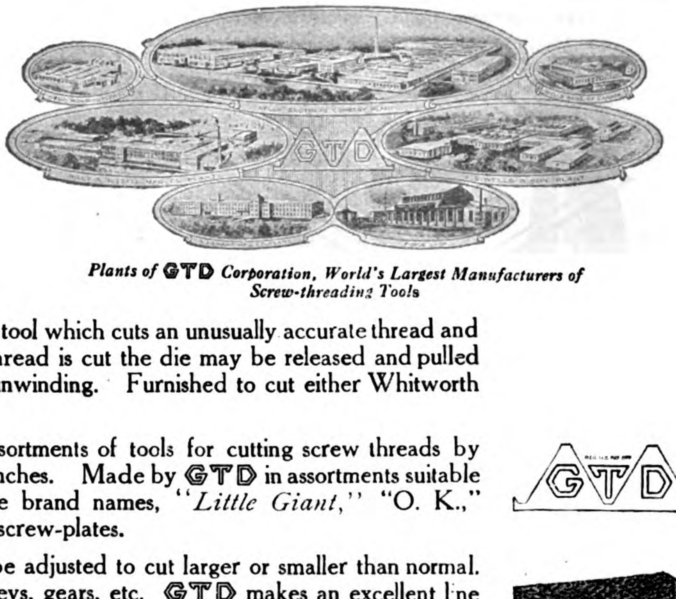

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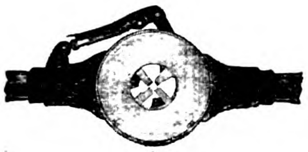

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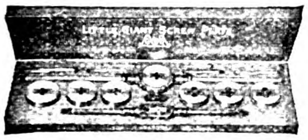

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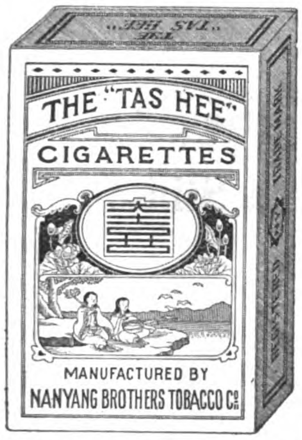

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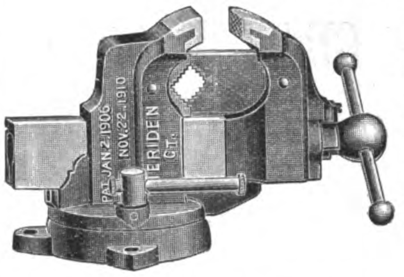

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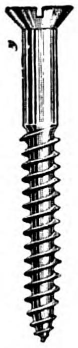

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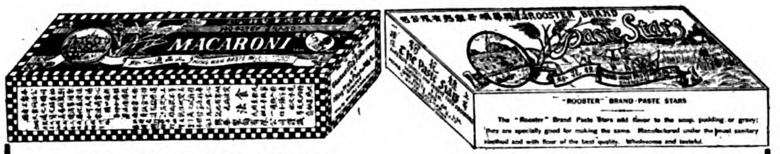

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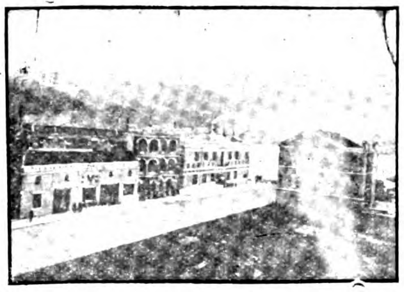

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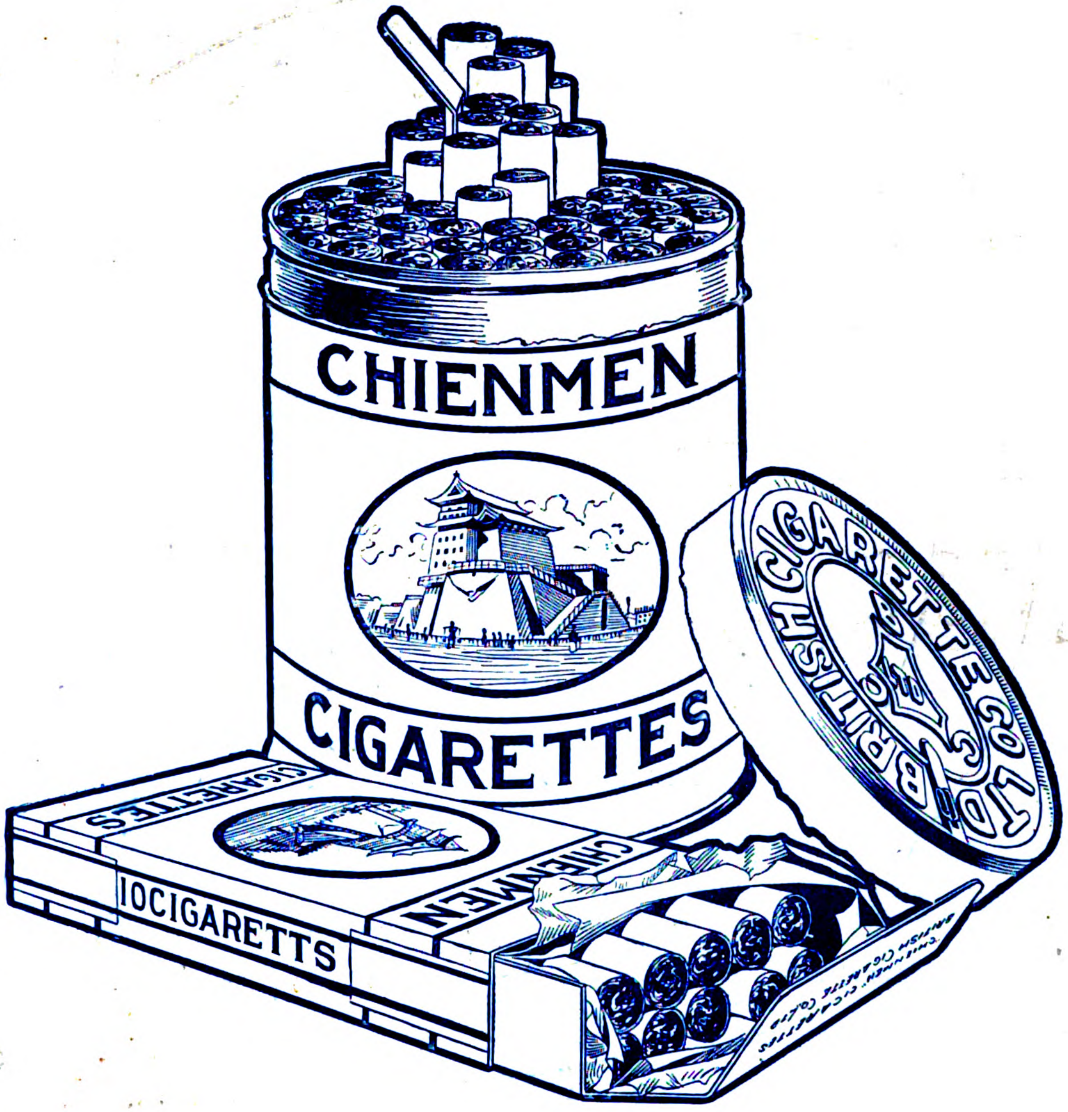

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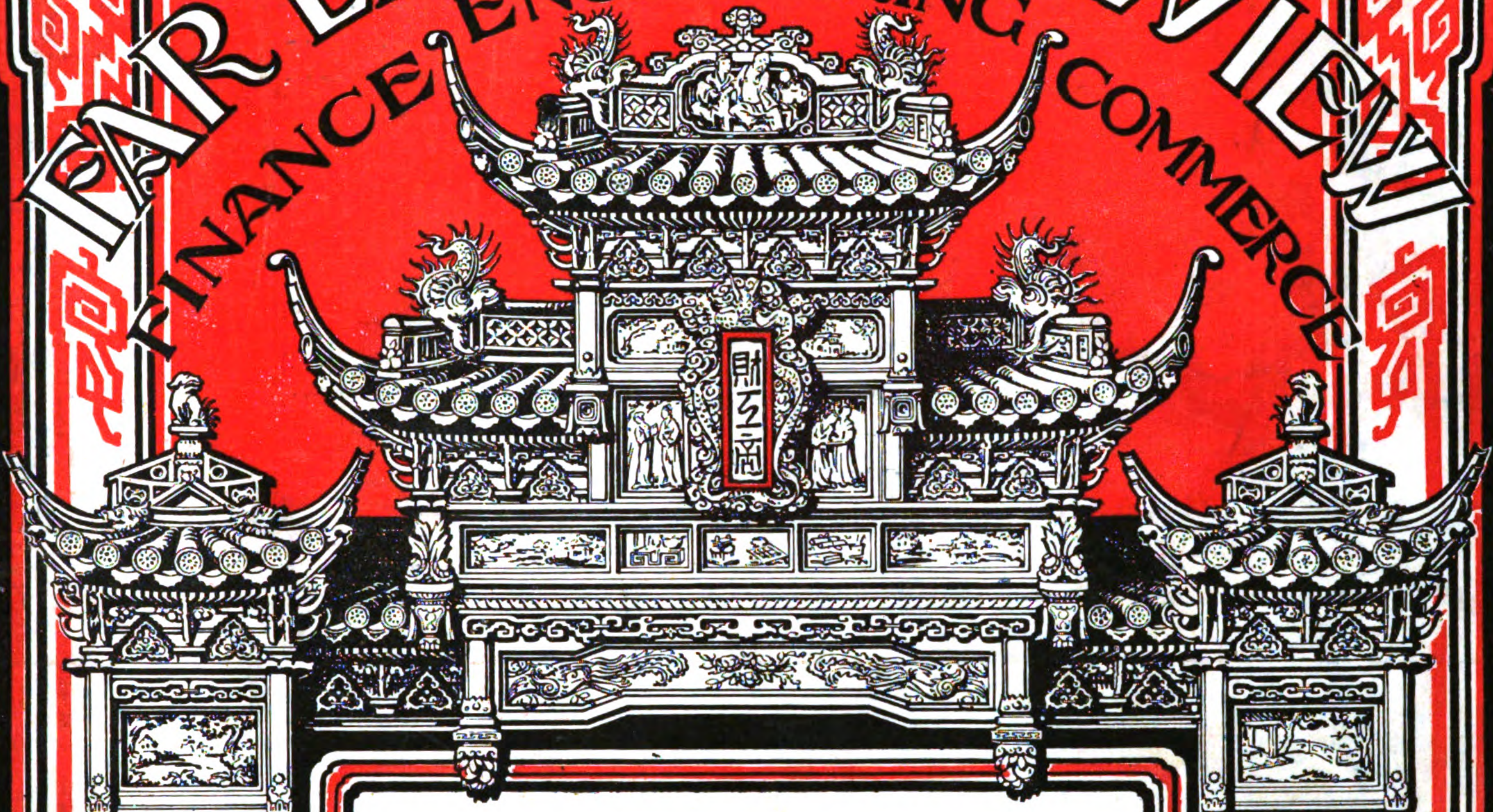

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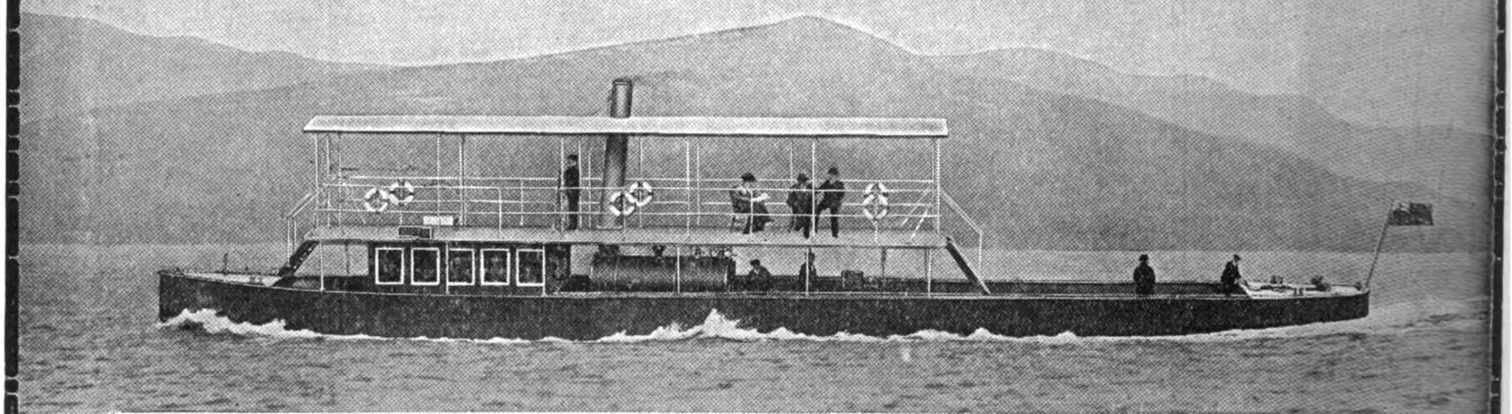

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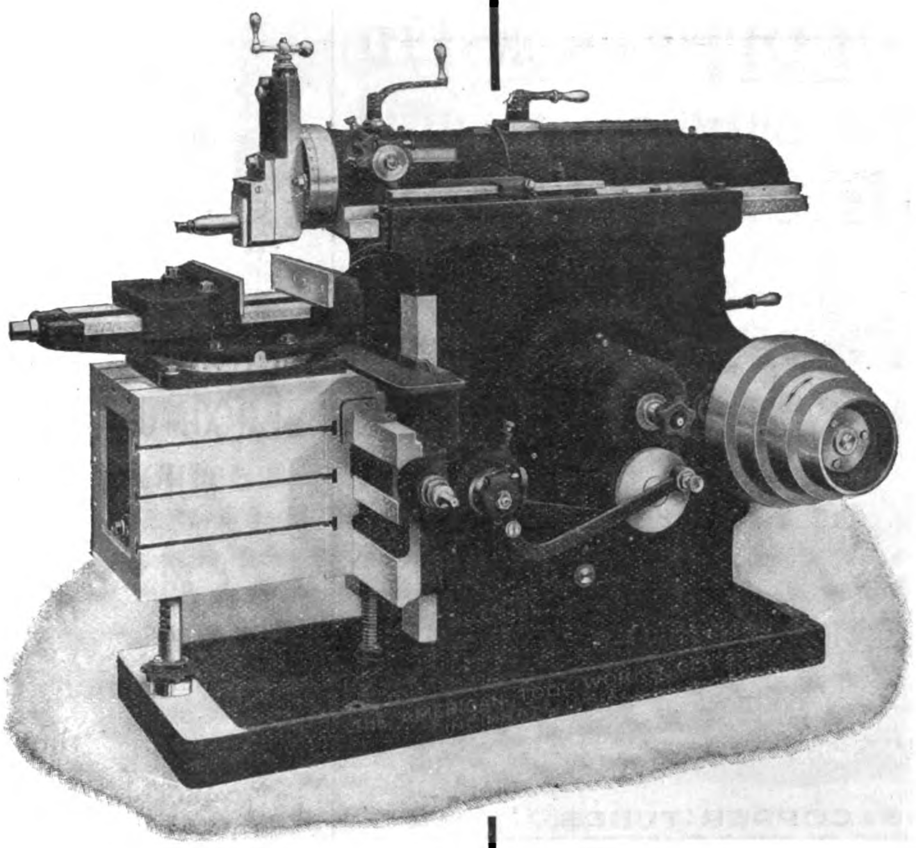

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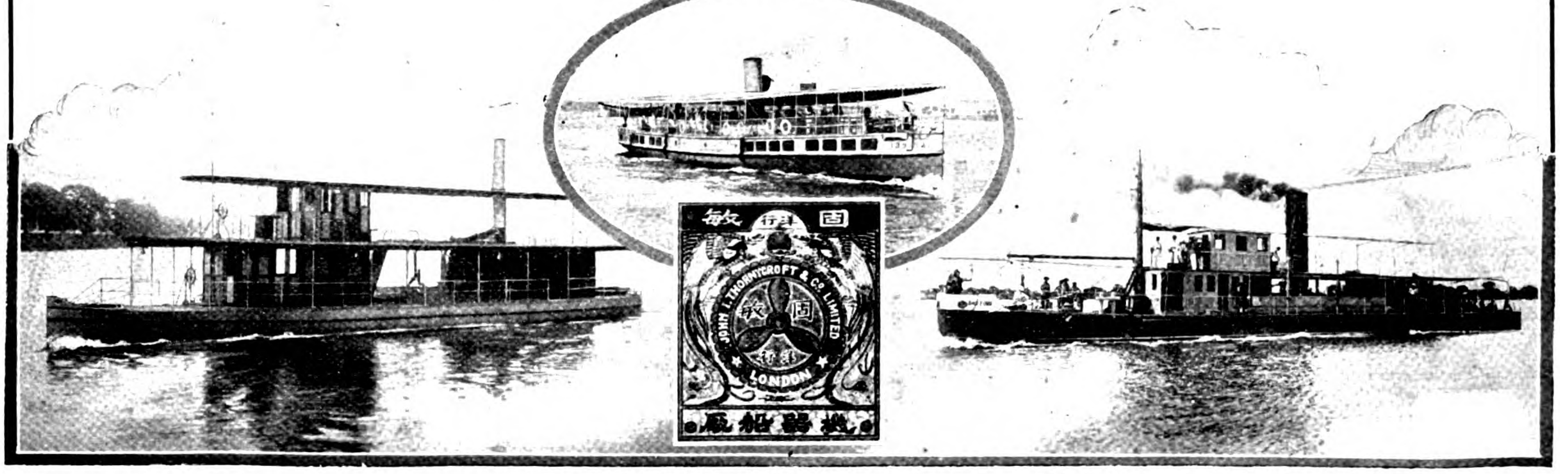

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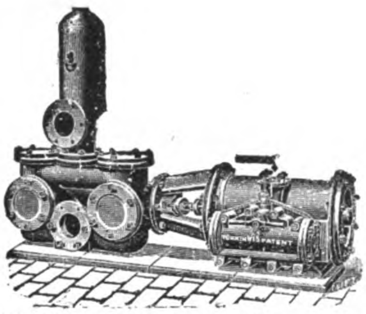

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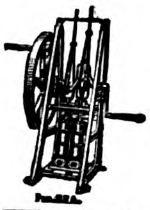

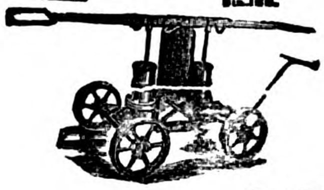

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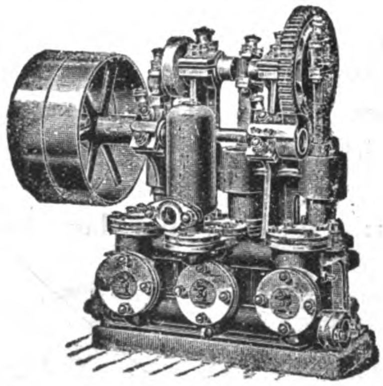

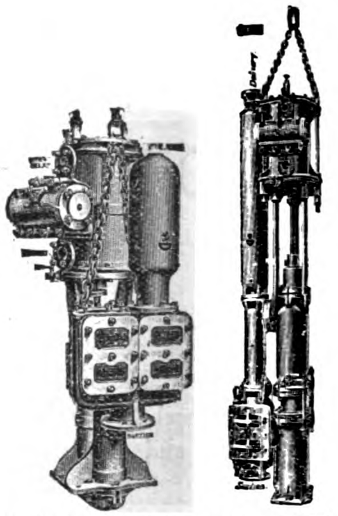

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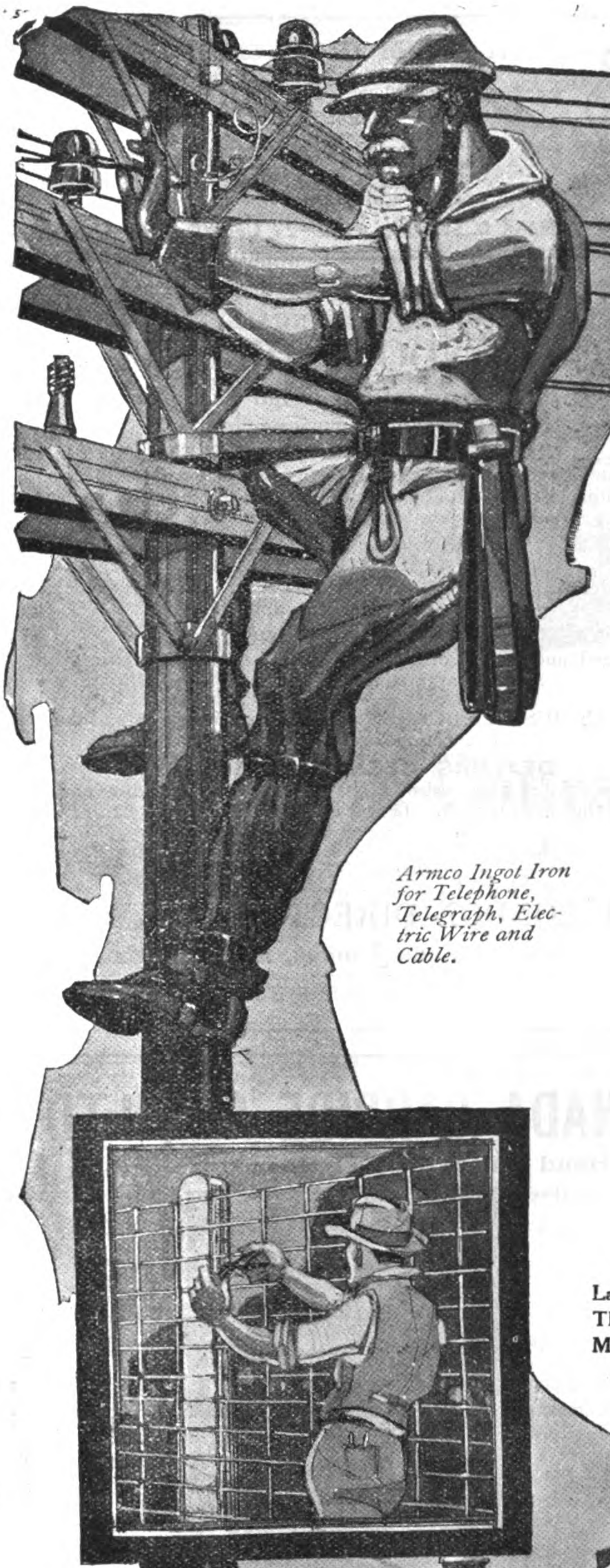

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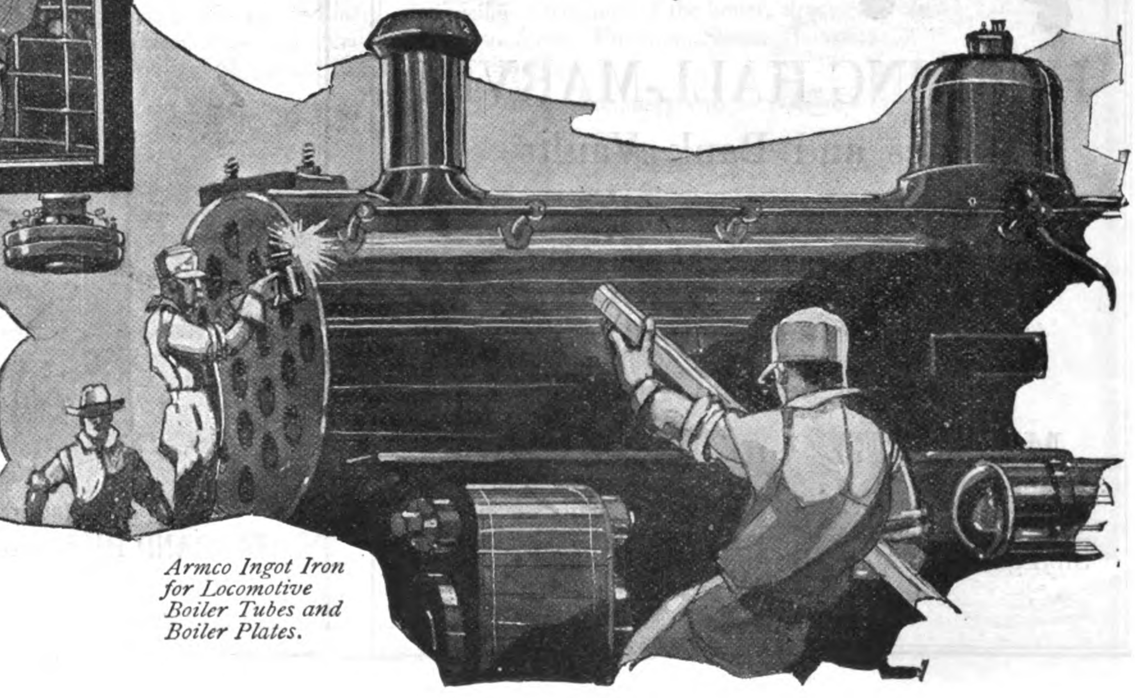

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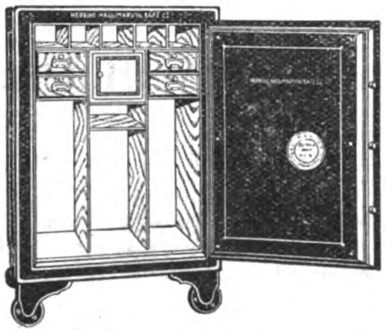

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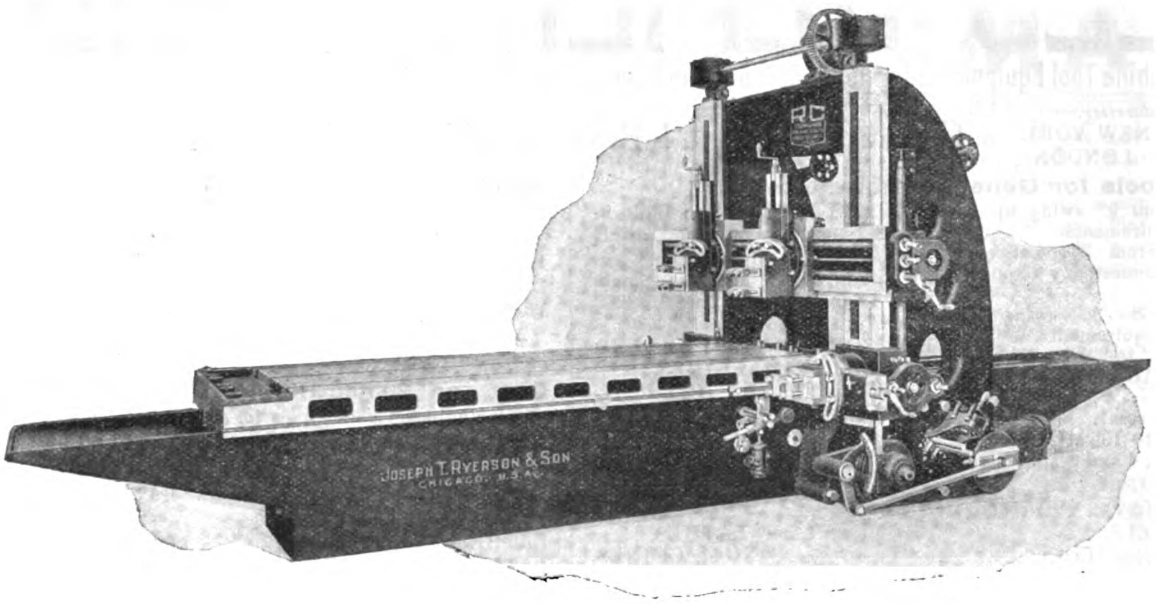

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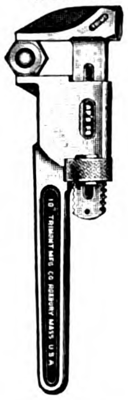

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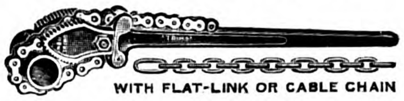

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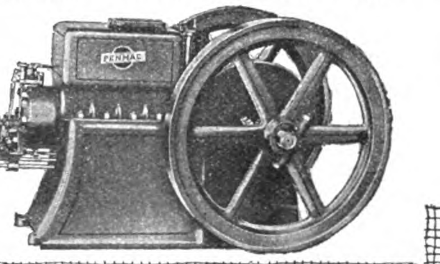

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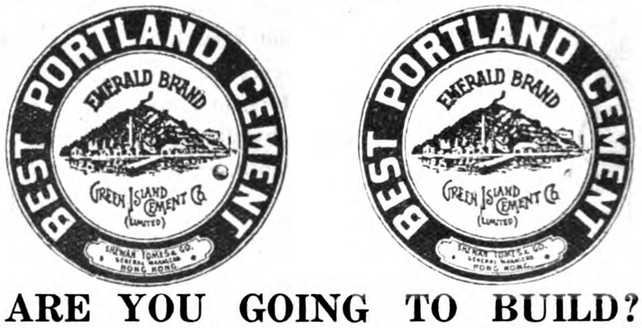

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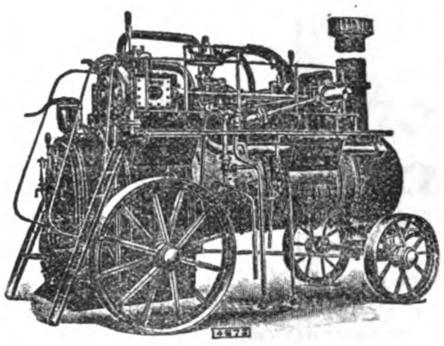

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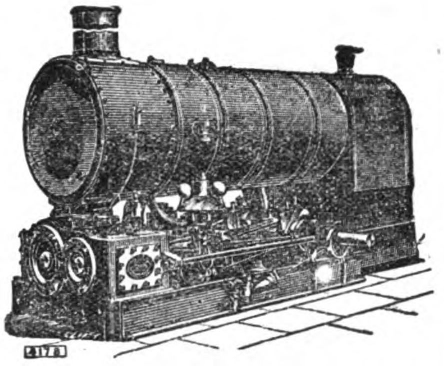

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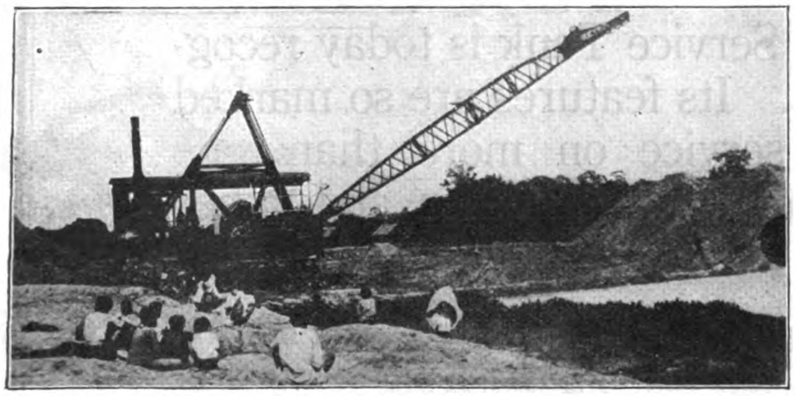

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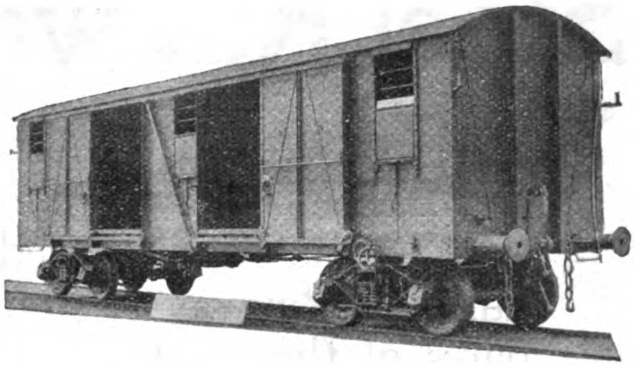

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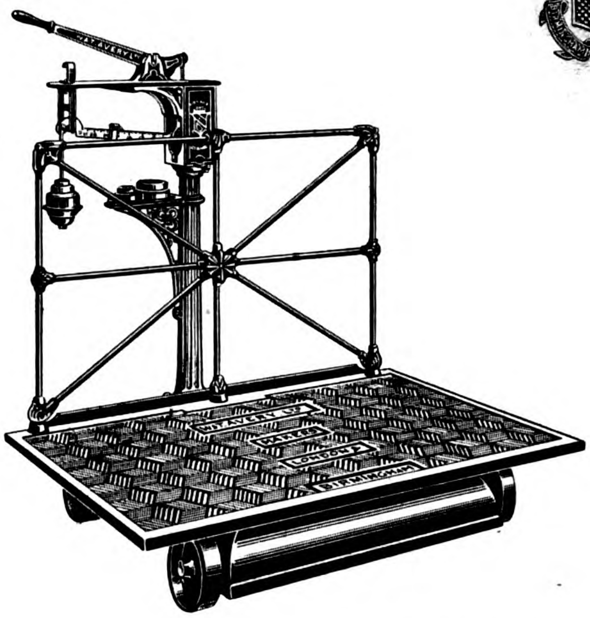

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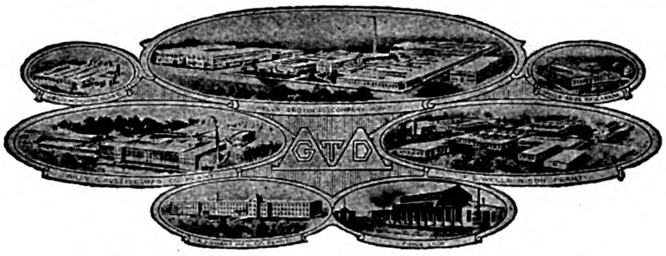

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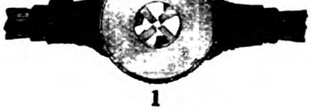

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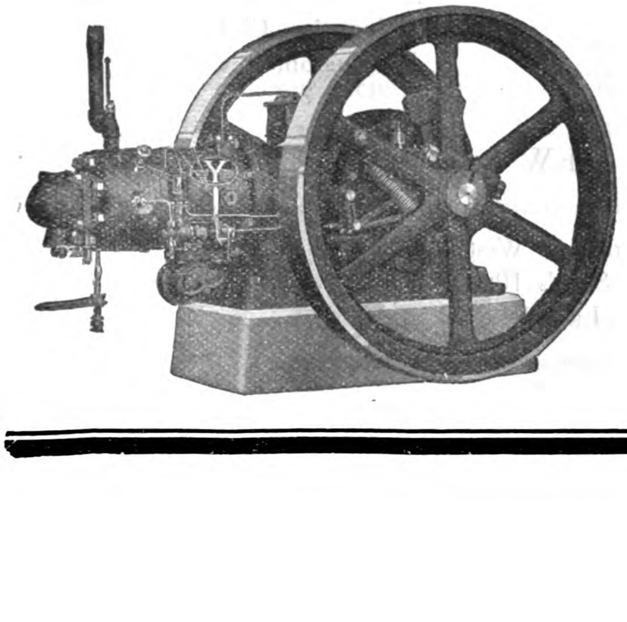

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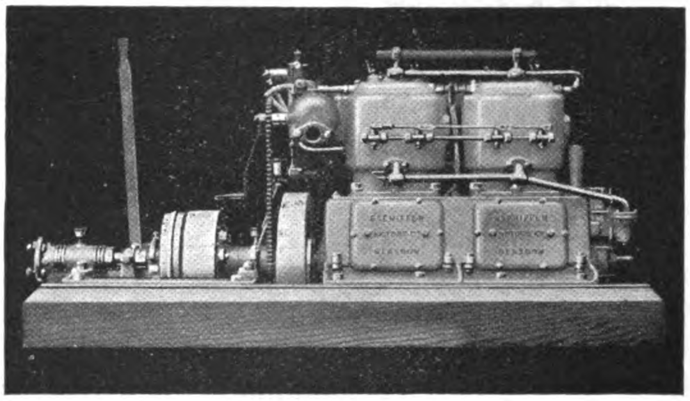

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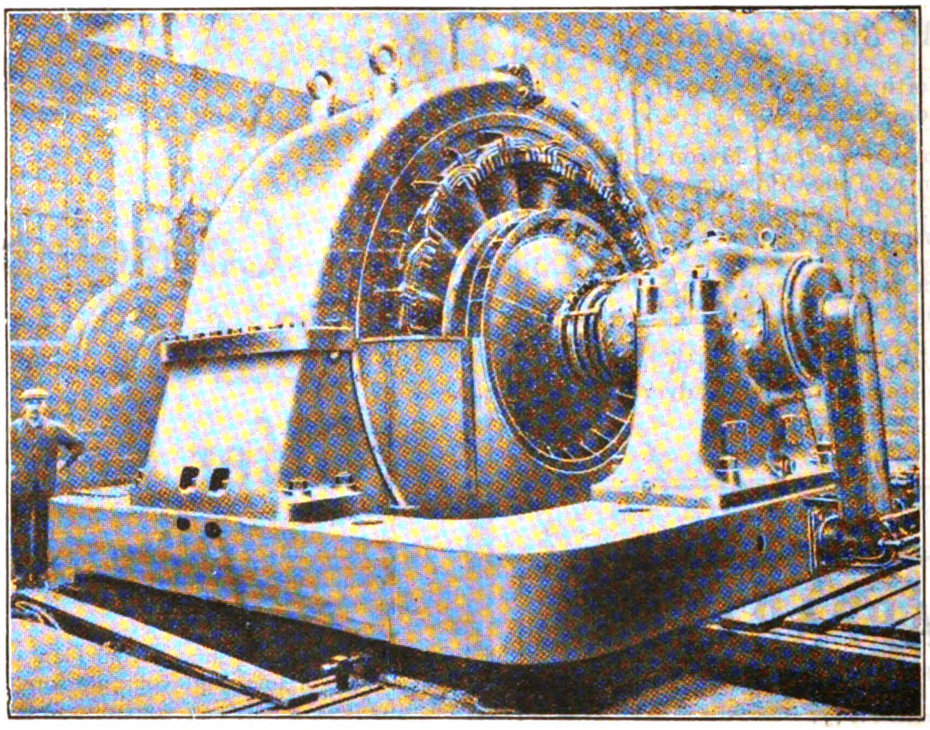

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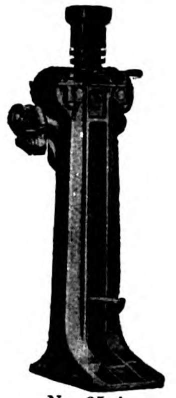

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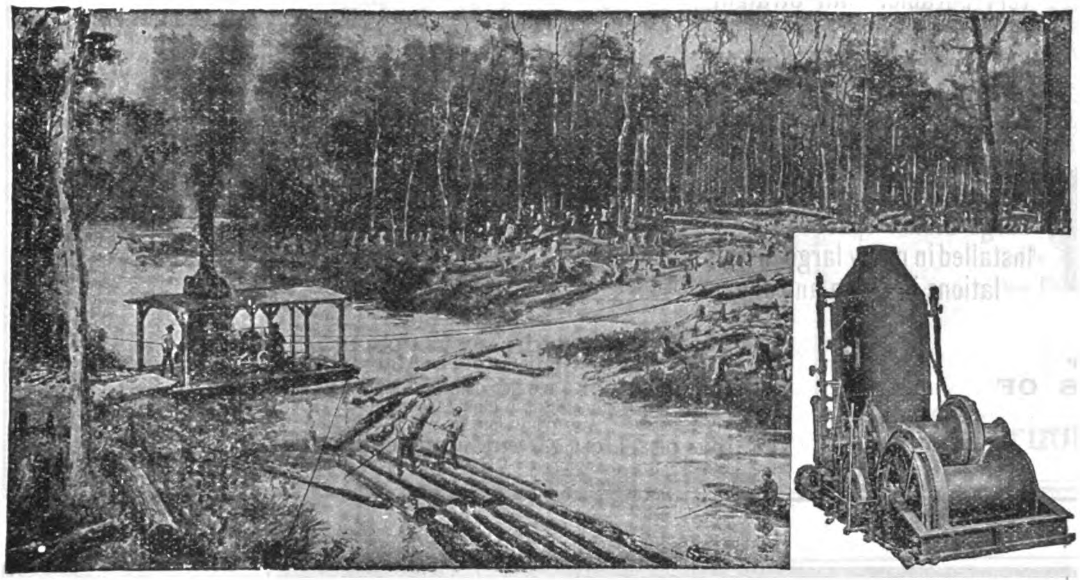

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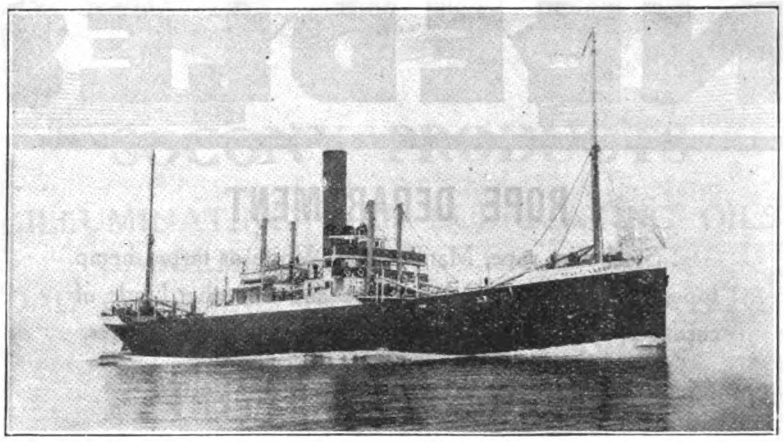

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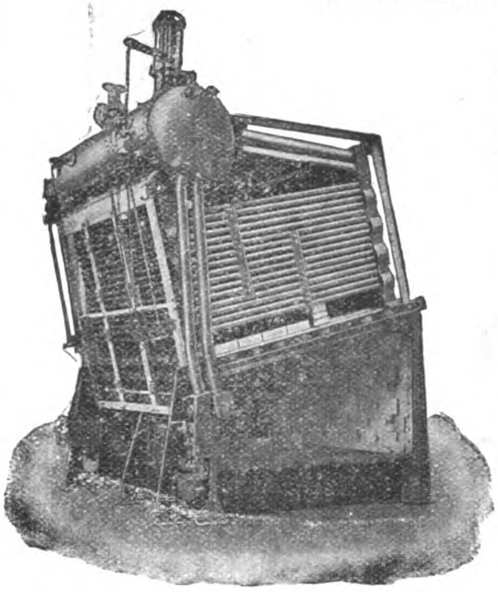

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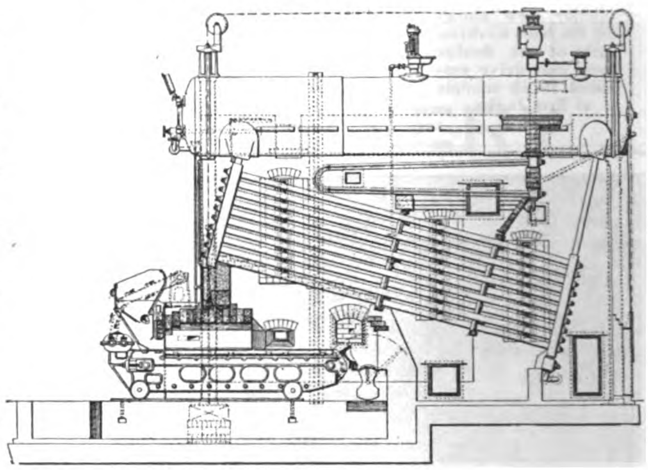

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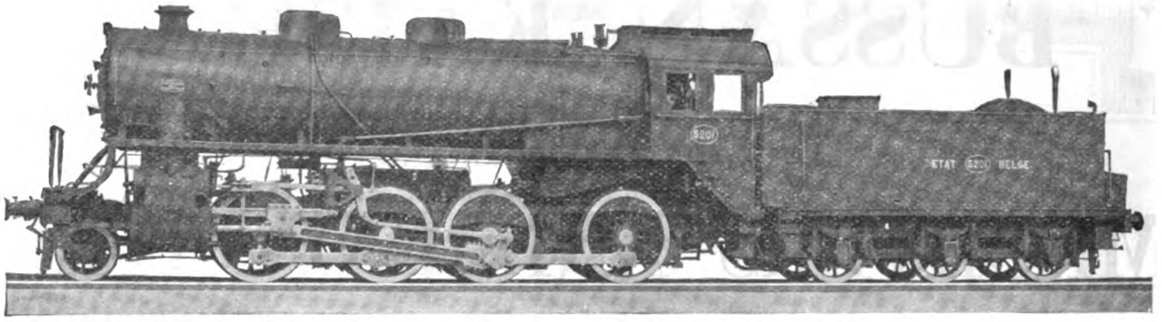

BUILT FOR THE BELGIAN GOVERNMENT

Total Weight of Engine, 188,000 pounds; Weight on Driving Wheels, 167,000 pounds; Diameter of Driving Wheels, $59\frac{7}{8}$ inches; Boiler Pressure, 200 pounds; Cylinders, 24 × 28 inches; Maximum Tractive Power, 35,000 pounds.

An unusual tribute to the locomotives supplied to the Belgian Government by the United States builders recently appeared in the Belgian official publication—"Chronique des Travaux Publics."

The following are extracts from this article:—

"The American locomotives measure up to the most optimistic expectations, inasmuch as we are using them on the Luxembourg line, the hardest division of our railways—and all are giving the best of service.

"The good quality of the American engine is proved by the significant fact that they are used in passenger service.

"The most important part of the locomotive—the boiler—is perfect.

"In a word, the American locomotives are giving entire satisfaction. They conform to the technical requirements imposed and they have to-day already given considerable service."

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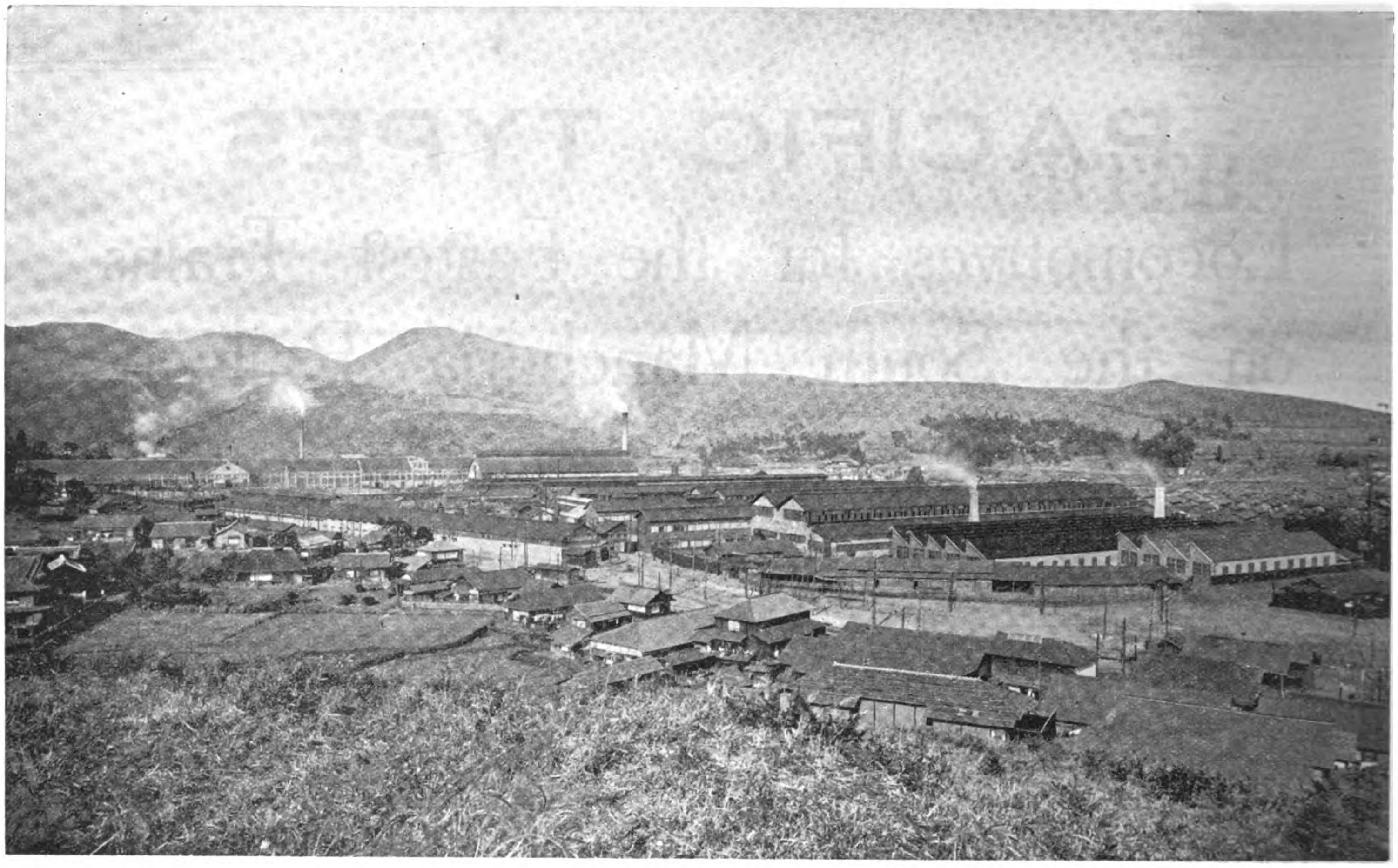

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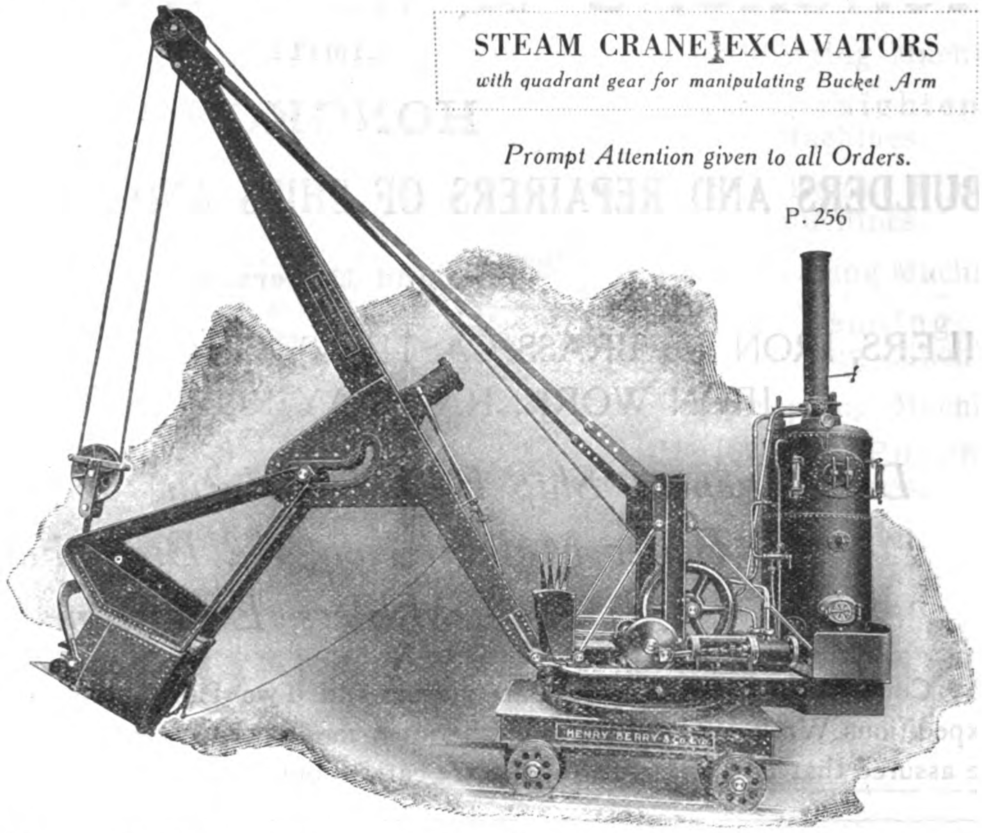

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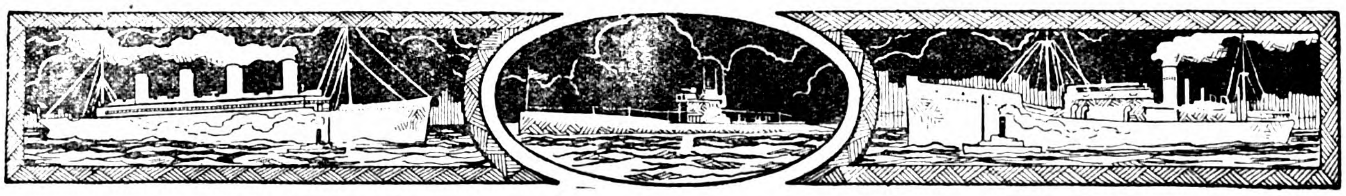

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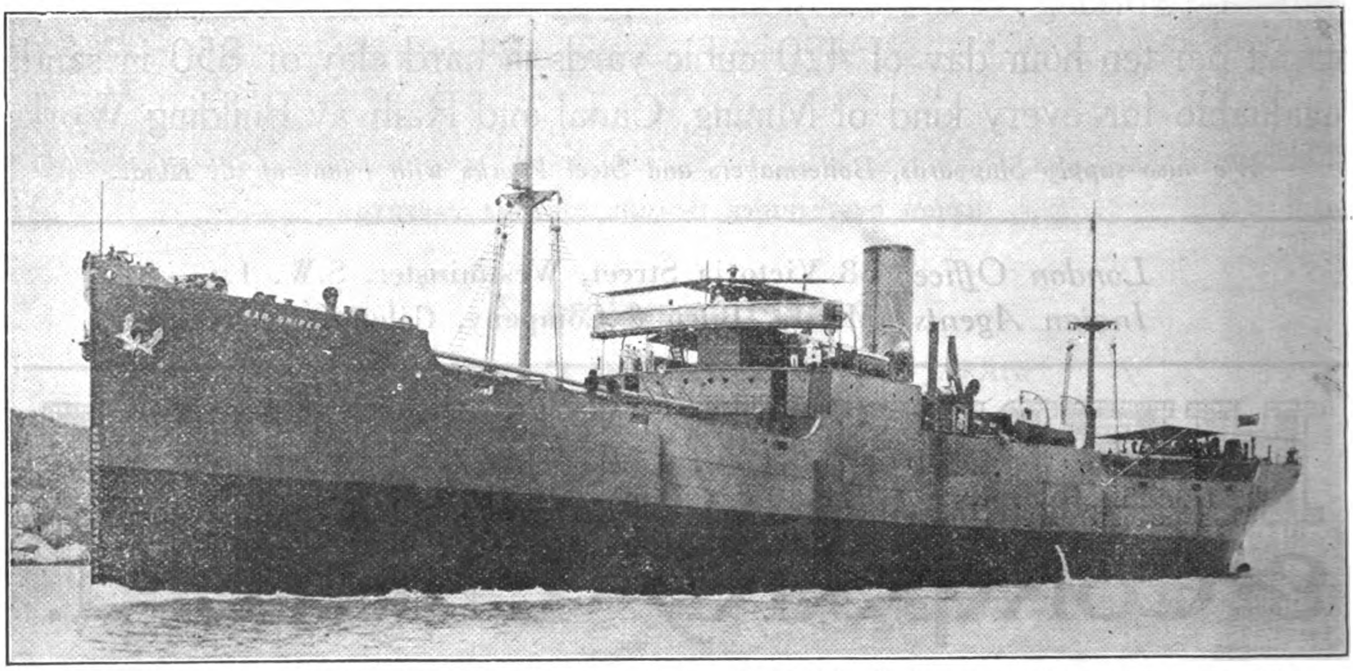

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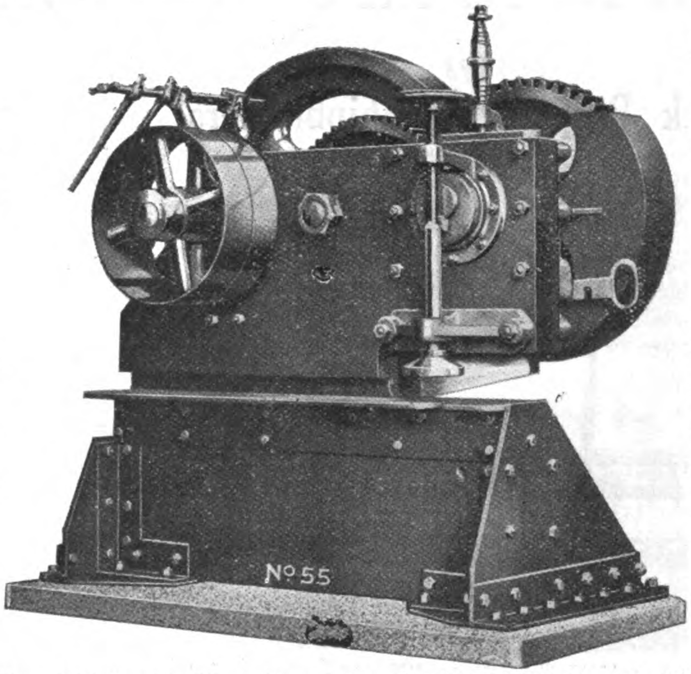

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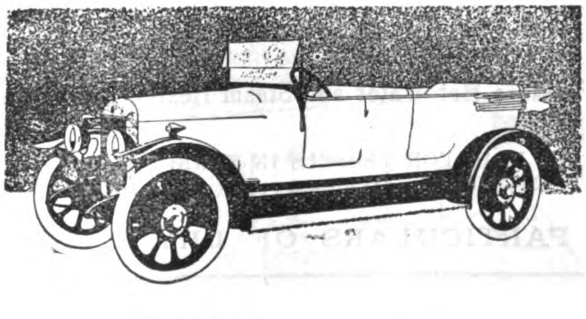

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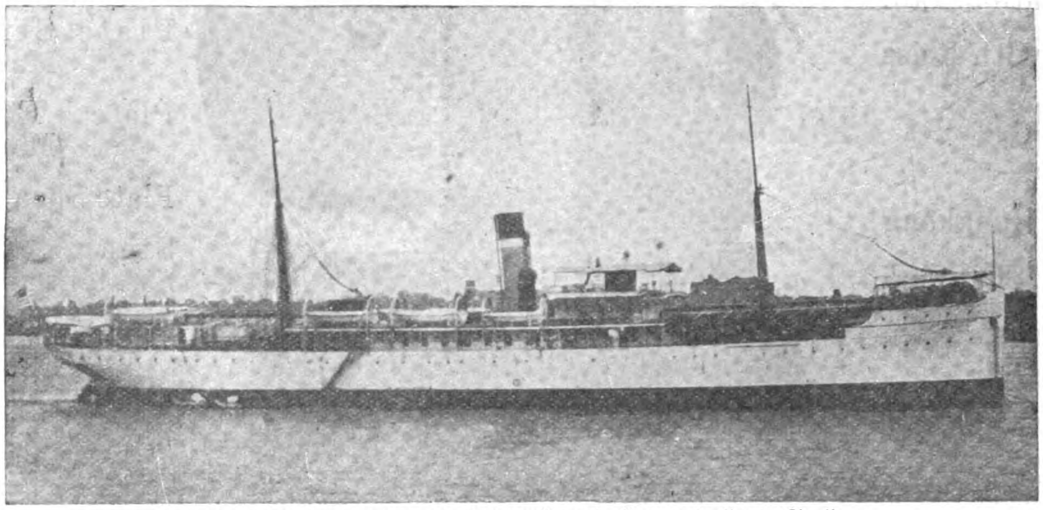

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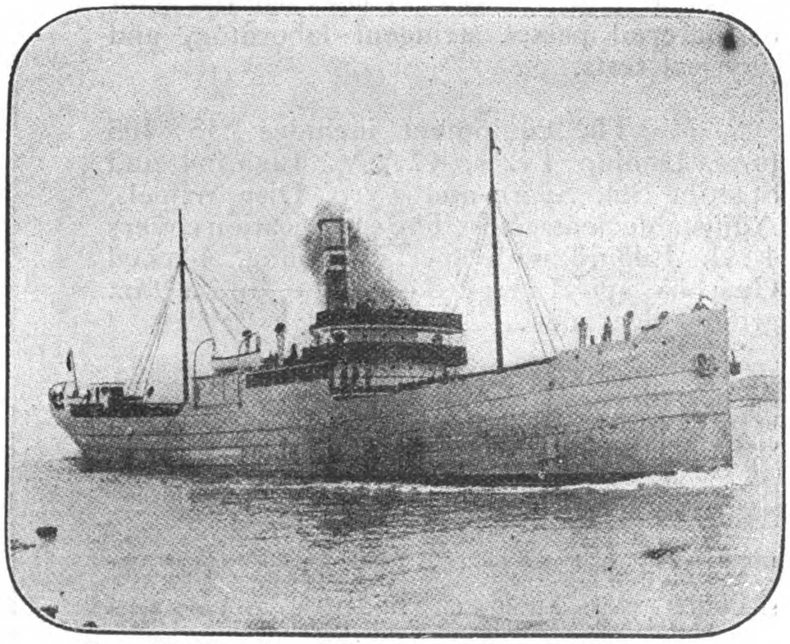

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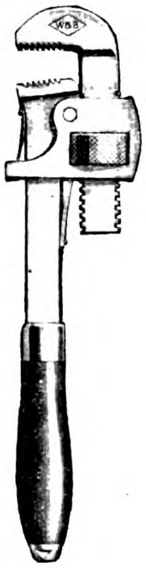

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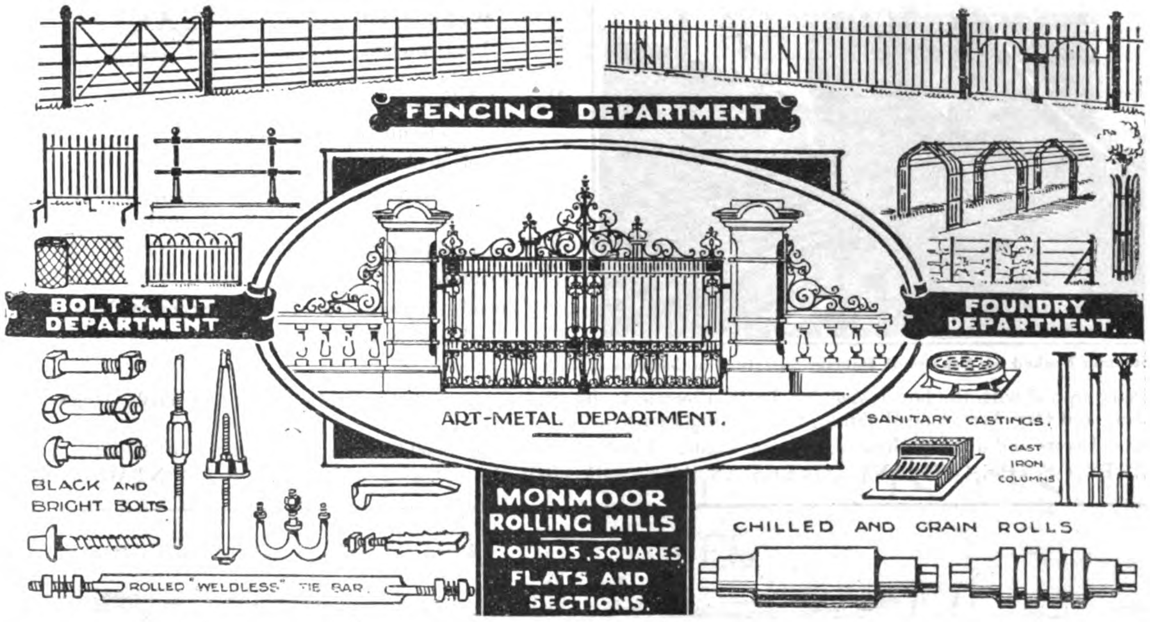

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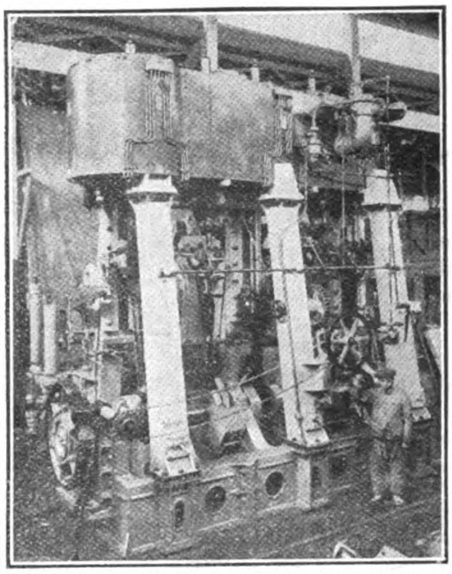

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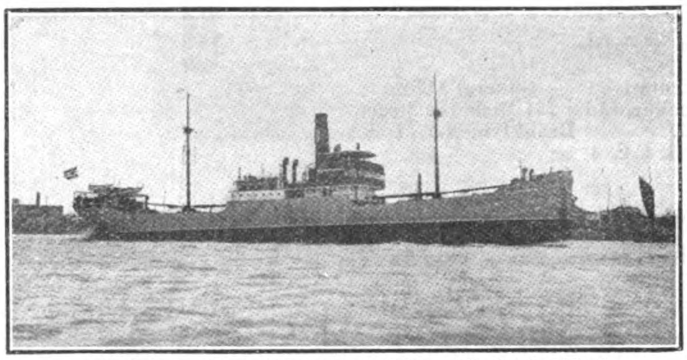

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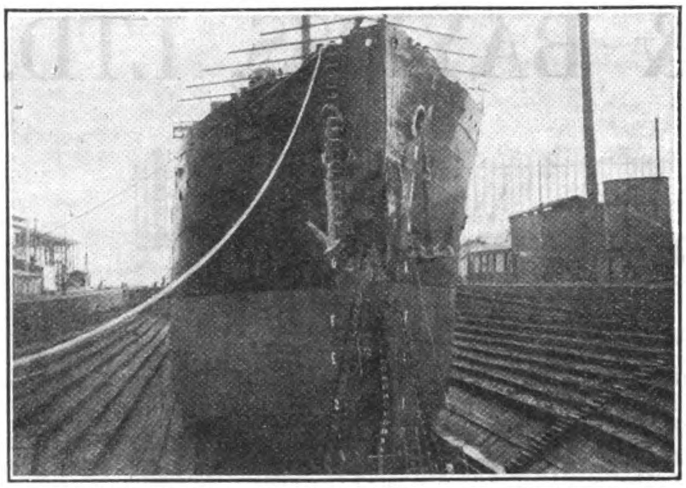

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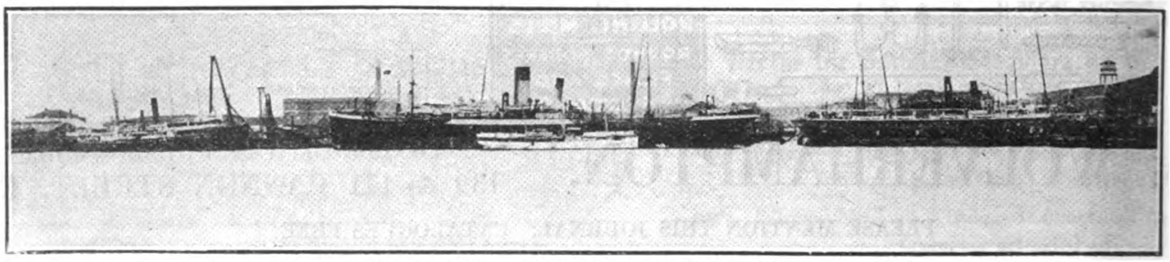

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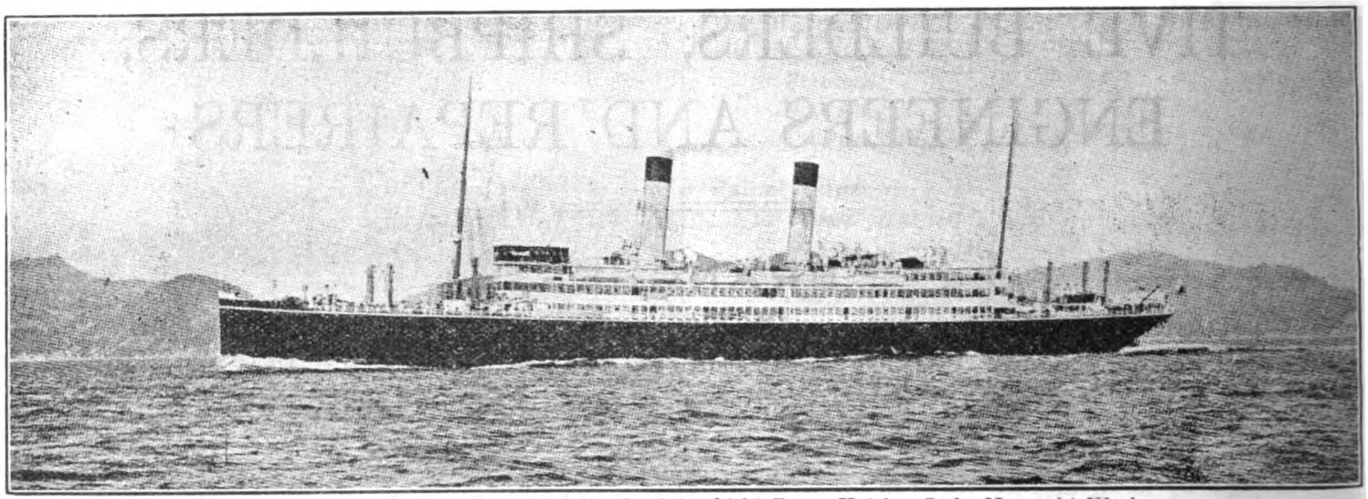

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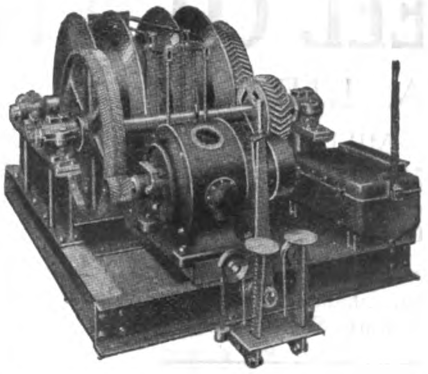

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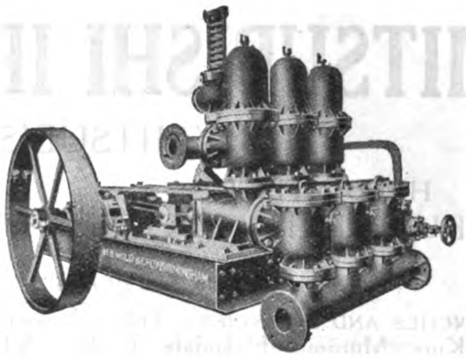

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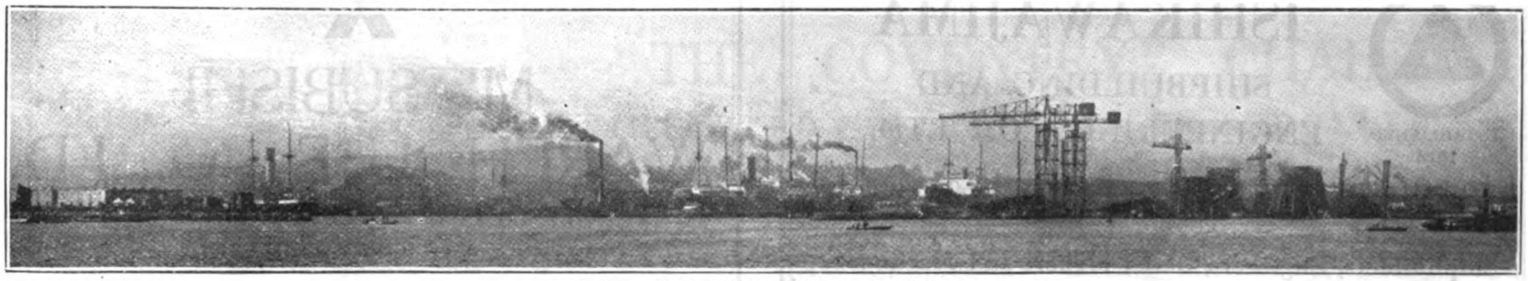

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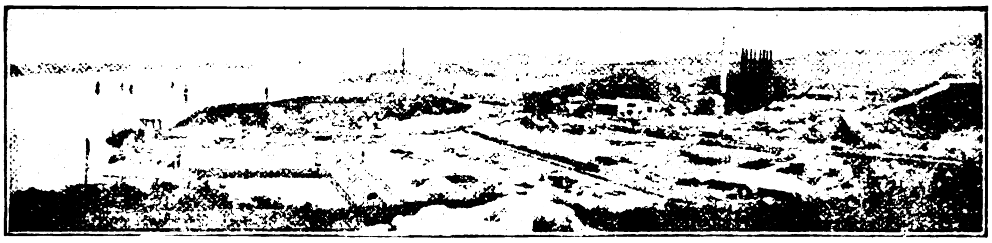

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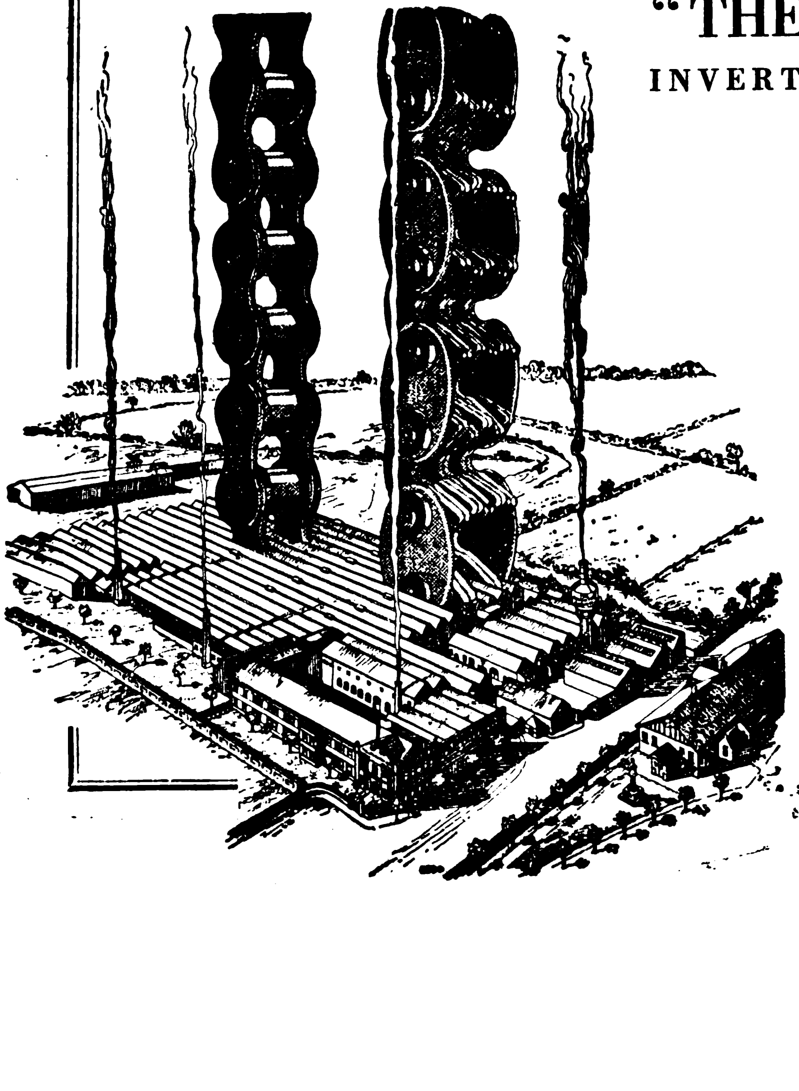

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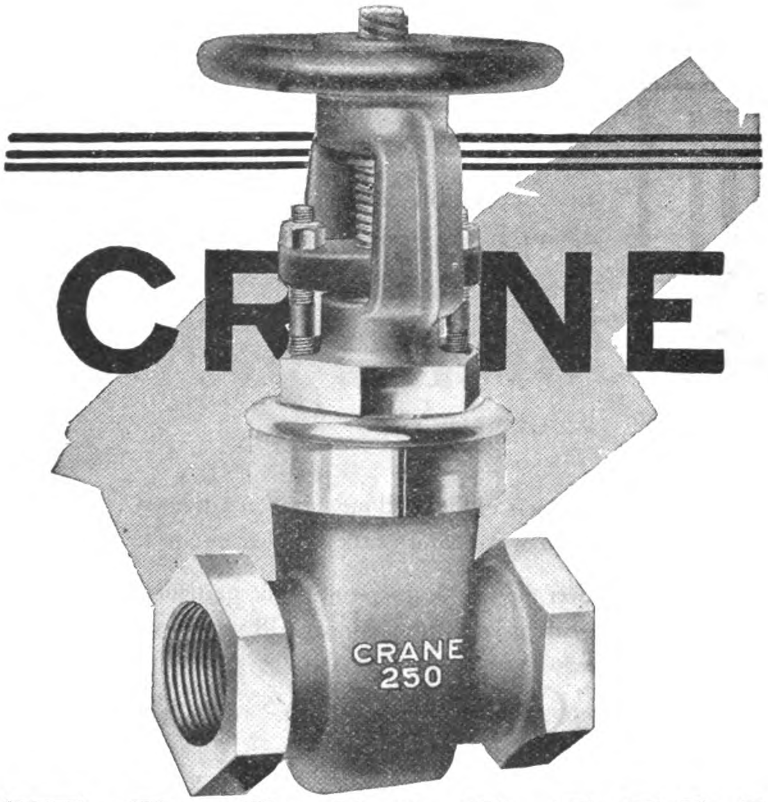

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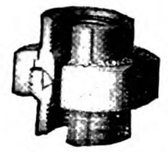

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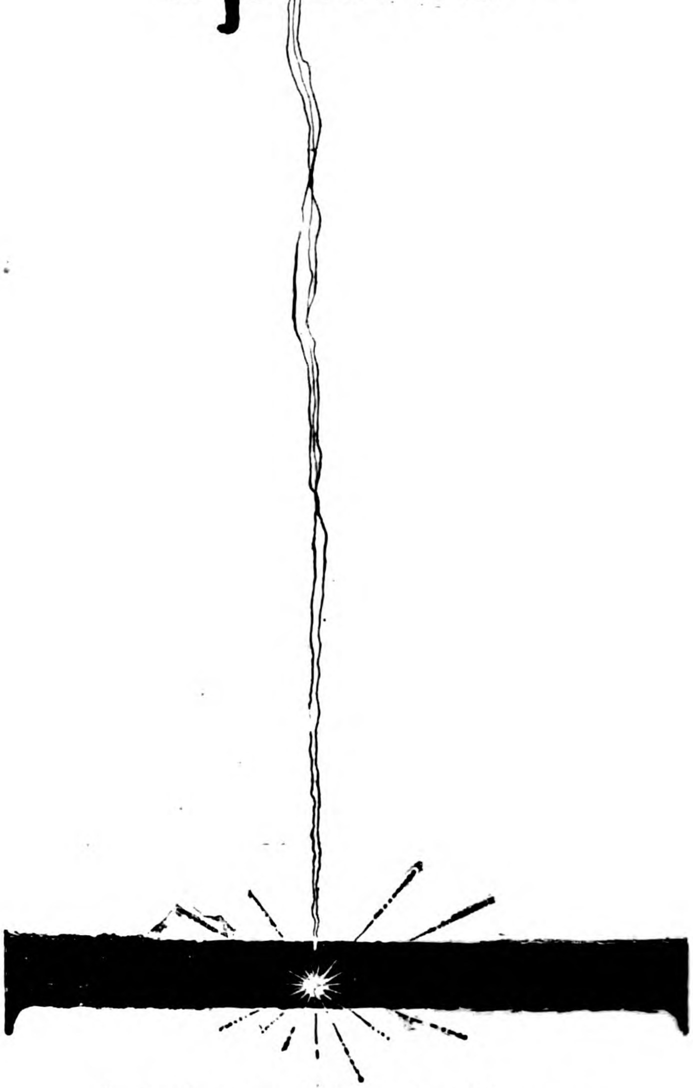
A falling spark



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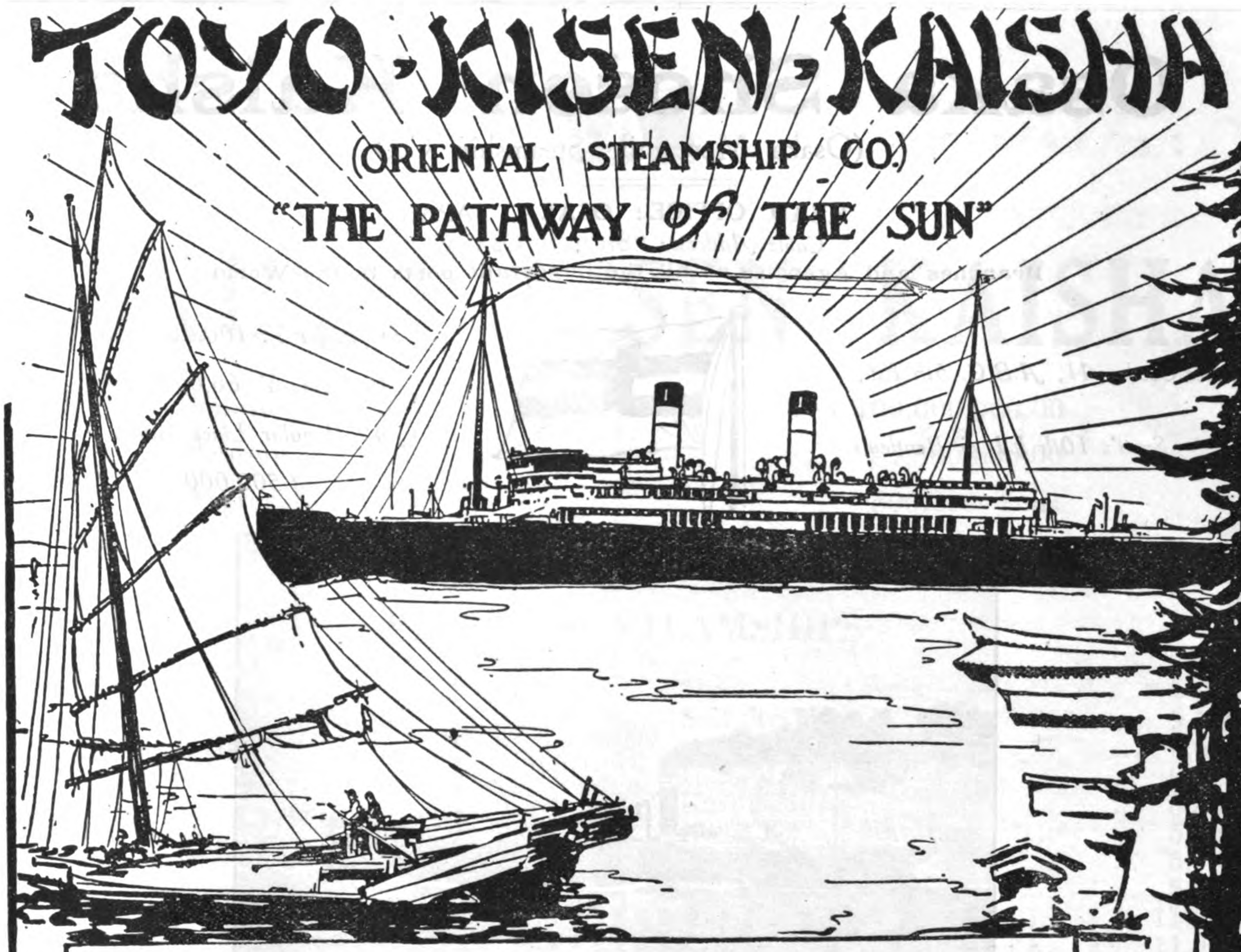

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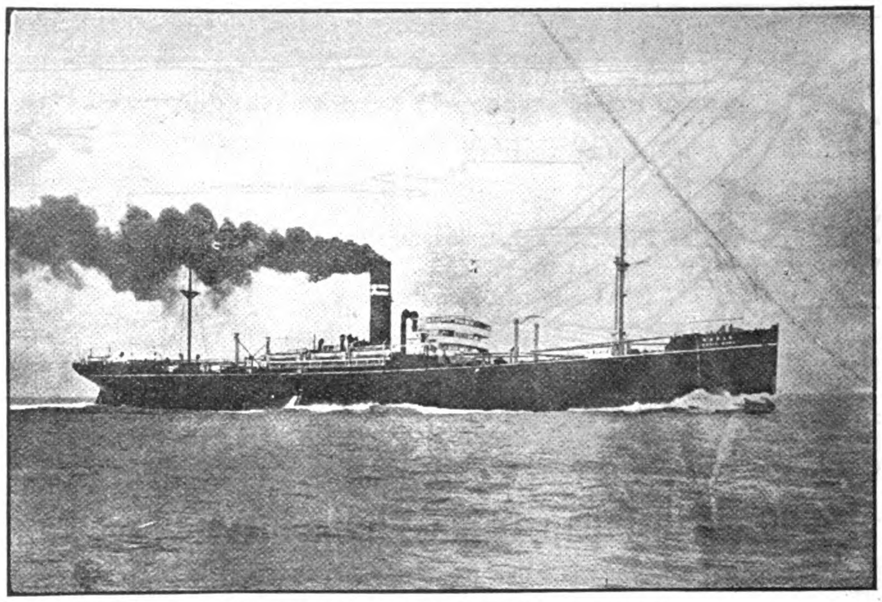

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JAVA-EUROPE LINE:—Monthly—Ports of Call: Sourabaya, Padan, Colombo, Port Sudan, Suez, Genoa, Marseilles, Antwerp and Hamburg.

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Tofuku-Maru	9,100	Kashu-Maru	8,800
Chifuku-Maru	9,100	No. 2 Kifunesan-Maru	5,000
Ryufuku-Maru	9,100	Yousan-Maru	5,000
Hankow-Maru	6,400	Taisan-Maru	5,000
Yoni-Maru	11,000	Yuri-Maru	11,000
Taibu-Maru	8,900	Texas-Maru	11,000
San Francisco-Maru	9,100	Tamatsu-Maru	6,600
Naple-Maru	9,100	Eifuku-Maru	9,100
Glasgow-Maru	9,100	Kifuku-Maru	9,100
Yayoi-Maru	8,700	Toyofuku-Maru	9,000
Yaye-Maru	11,000	Raifuku-Maru	9,100
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Buyo-Maru	8,800	Washington-Maru	9,100
Brazil-Maru	9,100	Tokufuku-Maru	9,100
Kofuku-Maru	9,100	Portland-Maru	9,100
Yezari-Maru	6,900	England-Maru	9,100
Yugao-Maru	5,000	Chili-Maru	9,100
Yubaye-Maru	5,000	Argentine-Maru	9,100
Sydney-Maru	6,400	Port Said-Maru	9,100
Shanghai-Maru	6,400	New York-Maru	9,100
Singapore-Maru	9,100	Karorin-Maru	6,400
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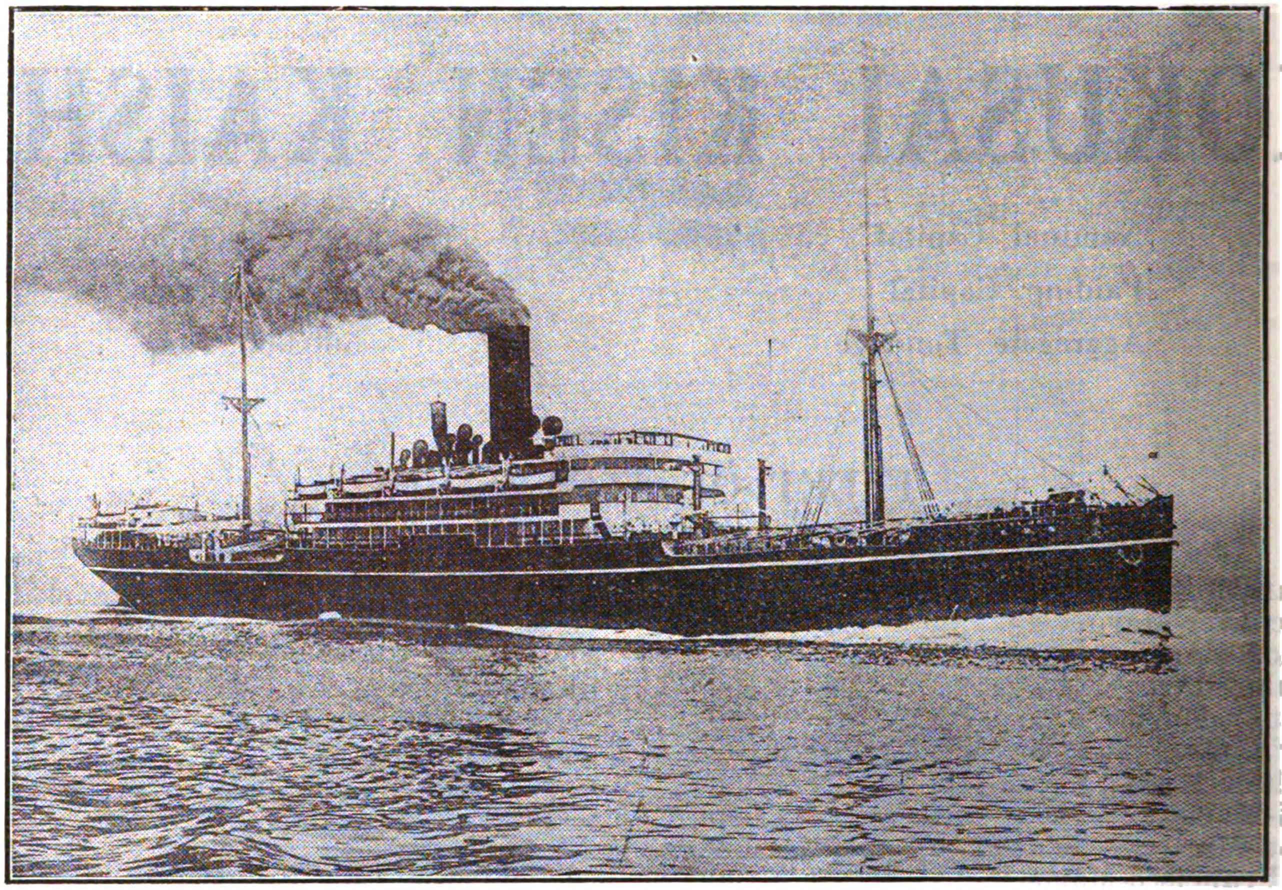

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BOMBAY LINE—Fortnightly

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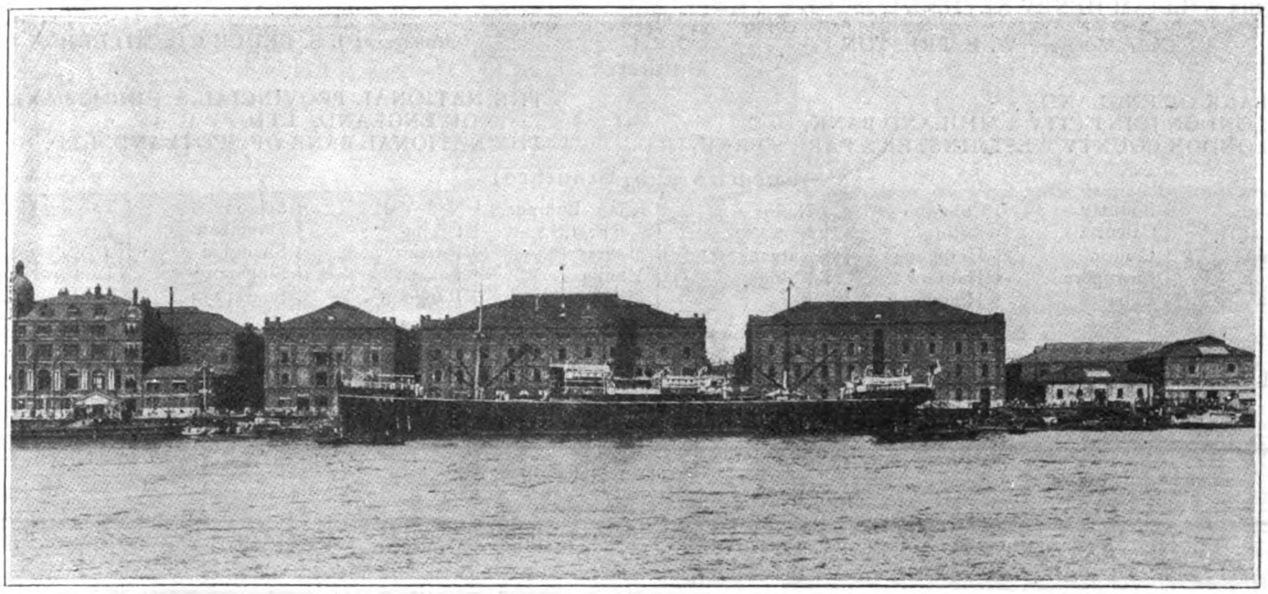

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVII SHANGHAI, JUNE, 1921 No. 6

How the New Bank Building will Look when Completed

"WAY-FOONG"

The Olive Leaf

" And the Dove Came Unto Him in the Evening and Lo, in her Mouth was an Olive Leaf, Plucked Off, so Noah Knew that the Waters Were Abated from Off the Earth "

AND so, after weary months of drifting and tossing about in the sea of financial depression, "Way-foong" fulfils its mission to the merchants of China and brings to them the olive leaf, plucked off, the sign that the storm has abated, that sunshine is breaking through the gloom and the old ark of commerce will soon again find a safe resting place in quieter waters. The laying of a corner stone for the magnificent new home of "Way-foong," coming as it does, during a time of industrial and commercial inactivity, is the olive leaf that symbolizes for the hongs of China that the waters of business depression are subsiding and that the future holds bright for those who have passed through the flood of hard times.

National lines fade away and disappear when one looks on the picture of the splendid new home of the Hongkong & Shanghai Banking Corporation now in course of erection on the Bund at Shanghai, and gives place to a feeling of genuine admiration for the pluck, perseverance, and intelligence, which in sixty years has developed and expanded the little treaty port commercial bank into the present magnificent financial institution, the strongest foreign bank in the British empire, one of the foremost in the world. It is not our purpose to review the history of the growth of "Way-foong" from its inception in the early sixties to its present proud place as the foremost British institution in China. To do so would be to record the history of the intervening years, of the

stubborn up-hill fight made by the British commercial pioneers who blazed the way to success against the passive, and at times active, resistance, of 400,000,000 people whose rulers were loath to open their doors to foreign commerce. The progress of "Way-foong" is the progress of British trade, British influence and British enterprise in China. British prestige owes much to the wide-awake yet conservative operations of this leading British bank, which, in turn, reflects upon the same characteristics of British merchants whose business the bank handled so successfully. British interests in China in many respects are so interwoven with the interests of the Hongkong & Shanghai Banking Corporation, that at times it is difficult for the layman to understand where one begins and the other ends. British railways in China owe their construction to the activities of the bank, shipping lines, mines and many industrial enterprises have been brought to their present state of efficiency through its support. In short, the name of "Way-foong" stands as the symbol of British far-sighted business intelligence which has won for them the premier place in the commerce of China and the entire confidence of the Chinese. In the far distant provinces, towns and villages of this vast country, the Chinese trader and merchant, who would never recognize the name of the Hongkong and Shanghai Bank literally translated, know and respect the meaning conveyed to them by the word "Way-foong," the symbol of a square business deal and upright financial transactions, a foreign bank which has lived up the Chinese merchants' traditional idea of commercial honor, whose word is as good as its bond.

Neither is it our purpose to review the financial history of the bank, except to invite attention to the fact that its capital was recently increased from $15,000,000 to $20,000,000, while its reserve fund stands at about $42,000,000.

Nor will we review the speeches and tributes uttered at the ceremony attending the laying of the corner stone of the edifice, all bearing eloquent testimony to the esteem and confidence of government and merchants in this great institution. Our readers will be interested, however, in a description of the mangnificent new structure that will stand as a permanent "Olive Leaf," a symbol holding out to the business community of Shanghai and the Far East, the promise that financial squalls of the future will be weathered in the same manner as the present disastrous gale.

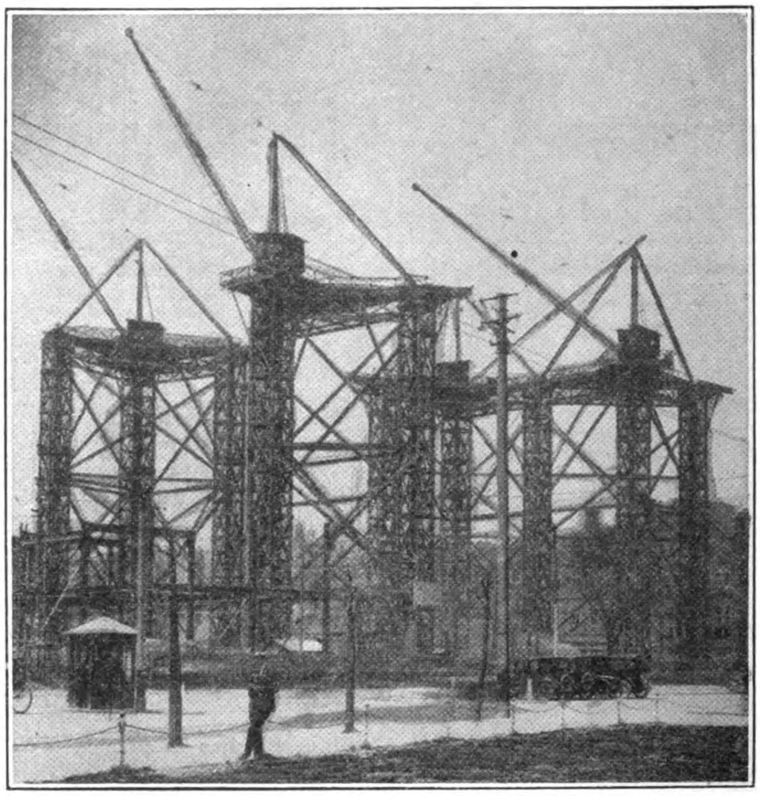


Photo by Rembrandt.

The Work of Construction

Four cranes, mounted on lofty towers, lift the material from motor lorries and place it in position, every part of the area being served in this manner

The New Premises—A Lordly Building

The final design for the building is of even greater dignity and beauty than the preliminary design. The style has been changed to *Neo-Grec*, and the pleasing result is due to correct scale and proportions rather than to the introduction of elaborate carving and sculpturing. The height from the pavement to the top of the parapet has not been changed, but the large central dome has been raised, and the height is now 180-ft. to the crown. The building is being faced with Hongkong granite, full height, on all the principal facades.

The main entrance to the bank is in the centre of the Bund facade and consists of three arches, each 11-ft. wide and 20-ft. high, approached by a flight of steps 62-ft. wide. The key stones of these three arches are crowned with heads representing Agriculture, the source of all wealth, in the centre, with Industry and Shipping on either side. The bronze arches will be filled with bronze gates of particularly fine design. Flanking the flight of steps will be pedestals with two bronze lions, which are being cast from models prepared by Mr. Henry Poole, A.R.A. Three revolving doors in bronze will give access to the entrance hall from the outer portico. These doors are set in glazed bronze screens.

Symbolism in the Entrance Hall

The entrance hall is the principal feature of the interior; it is octagonal in plan, 52-ft. across, the shape of the dome spanning being of a novel design. It will be supported on eight detached Sienna marble columns with bronze capitals and bases. The spandrels between the arches and the walls below, and the whole dome above, will be in rich mosaic, the subjects being as follows :

Circular panel on ceiling:—Ceres, the Goddess of Plenty or Abundance : Helios the God of the Sun, and the horses and chariot with which he traverses the heavens : Artemis, the twin sister of Helios, the Goddess of the Moon, on her forehead the crescent : one-half of the background Day, the other Night : Border, inscriptions from the Chines classics.

Surrounding this panel are eight heraldic lions in gold, and geometric symbols in squares including the Swastika (good fortune), Solomon's Seal (wisdom), etc.

The signs of the Zodiac are placed in the following positions in the hall :—S. Aquarius ; E. Taurus ; N. Cancer and Leo ; W. Libra and Scorpio ; S. E. Pisces and Aries ; N. E. Gemini ; N. W. Virgo ; S. W. Saggitarius and Capricornus. These are shown on a dark blue ground wlh wide gold borders.

Banking Centres of the World

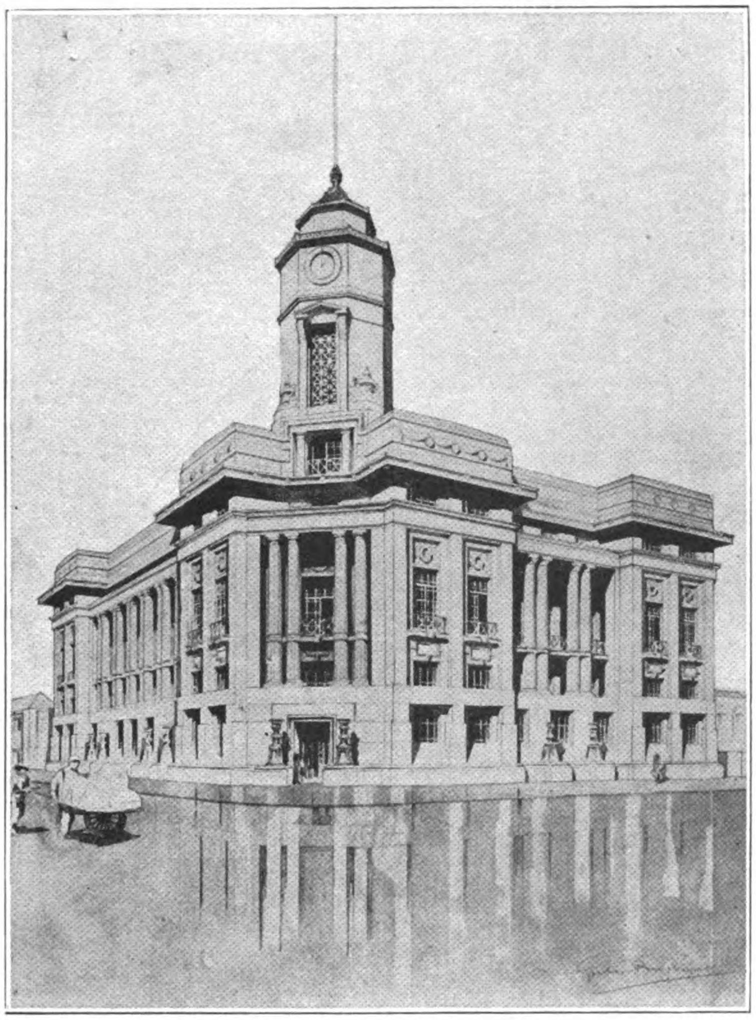
There are eight principal panels in the hall, the decorative motif of which is the banking centres of the east and west. These will be worked out on the following lines :—

London—Central figure of Britannia with trident and British lion. On the left a figure with the City arms. On the right, a symbolic figure of the Thames with model of a ship. The background will show the Houses of Parliament and St. Paul's Cathedral from over the river, while the heraldry employed will be that of England, Scotland and Ireland.

Paris—Cental figure of the Republic and tablet inscribed "Liberty, Equality and Fraternity." On the left a figure of the Arts with statuette. On the right, the city arms. Heraldry, the arms of the Republic and the fleur-de-lis. The background will show a view of the Seine and Paris, principally of the Cathedral of Notre Dame.

THE NEW HONGKONG & SHANGHAI BANKING CORPORATION BUILDING, BEING ERECTED AT SHANGHAI

The Octagonal Entrance Hall



As the Building at Harbin will Appear

New York—Centre, Bartholdi's well-known figure of "Liberty enlightening the World." Left, Hermes, the promoter of social intercourse and commerce among men, with his symbols, winged hat and caduceus. Right, the national arms.

Bangkok—Central figure symbolic of the jungles and forests of Siam. Left, a figure representing hewers of timber. Right, a figure symbolic of agriculture and rice cultivation. Heraldry, a white elephant on a red ground. Background, a temple at the mouth of the Chao Phya Menam River (the Mother of Waters).

Shanghai—Centre figure, Foresight or Sagacity with Sextant. Left, symbolic figure of the Yangtzekiang. Right, shipping. Background, the Hongkong & Shanghai Bank and the Custom House from the river.

Hongkong--Centre figure with British flag symbolic of its becoming a British Crown Colony in 1842. Left, figure of Commerce. Right, figure suggestive of the Canton River. Background, Chinese junk and view of Hongkong from the harbor.

Tokio—Centre, figure of Learning. Left, youth symbolic of Progress with national emblem—the rising sun—on shield. Right, Science, with scroll and compasses. Background, view of city from the sea.

Calcutta—Centre, the figure of Mysticism. Left, Philosophy. Right, Trade with scales, and heraldic shield with arms of the city. Background, the Hugli River, High Court, etc.

Other Features

On the eight spandrels between the arches and pilasters are likewise symbolic figures, the subjects being :—Prudentia, Probitas, Historia, Aequitas, Temperantia, Justitia, Labor, Subtilitas, Fortitudo, Philosophia, Ordinatio, Fides, Veritas, Experimentia, Scientia and Sapientia.

The names of the principal branches of the bank are also shown and the dates of their establishment.

How the Rooms are Arranged

Turning now to the arrangement of the bank premises. On the left of the entrance hall will be the brokers' room, manager's room, private office, book and telegrams, stenographers' room, etc. On the right the accountant, coupon room, etc., and safe deposit.

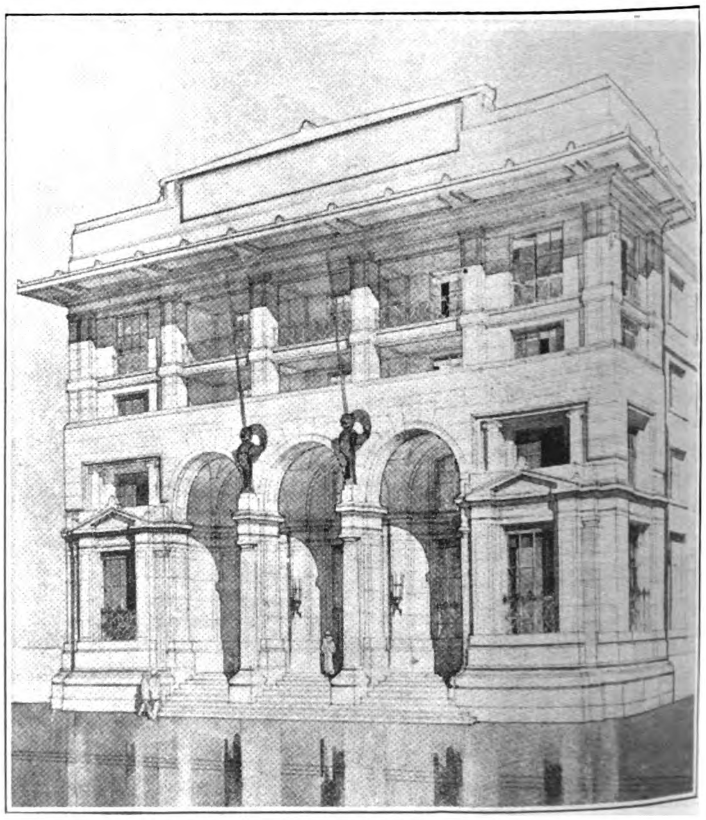
The main banking hall is reached by crossing the entrance hall. It consists of a very large hall, 21,500 sq. ft. in area with windows on two sides and large ceiling lights. Above this there is an outer light and provision for special protection from the sun in summer. The walls and columns will be faced with marble. The ceiling will be of fibrous plaster relieved by handsome bronze electric light fittings.

At the south end of the banking hall will be a marble staircase giving access to the mezzanine, where are planned the record room, stationary, telephone and changing rooms. At the north end of the hall there is a similar mezzanine making the hall symmetrical. Below the marble staircase at the south end of the hall there is another entrance to the bank on the Foochow Road. The counters will be faced with marble, finished on top with bronze grilles.

The Chinese banking hall is situated at the southwest angle of the building and provided with a separate entrance on the Foochow Road, but may also be reached from the main banking hall. The compradore's office and private room are contiguous to the Chinese banking hall. The savings bank has a separate entrance on the Foochow Road frontage.

The Treasuries

Treasuries are to be built at the northwest angle of the building with an observation corridor all round, giving storage for many million taels of silver. The doors will be of the latest fireproof pattern, and all the most up-to-date fittings for the protection of the treasury will be provided. In addition to the accommodation already mentioned there will be the shroffs' room, room for checking and packing sycee, room for despatch and receipt of chits, strong



A Perspective of the Future Dairen Bank

rooms for books, shipping documents, etc., and ample lavatory accommodation in convenient positions.

Suites of Offices

The upper floors are designed as suites of offices, with four staircases and six electric lifts giving access to same. Other staircases are provided for coolies and escape in case of fire. It is of interest to note that the outer walls of the lavatories are in most instances set back from the main frontage, forming verandahs so planned that the ugly soil pipes and piping generally will not be seen and mar the appearance of the building. The roofs are flat with ventilating chamber below which will ventilate the building in summer by introducing a current of cold air.

The finish of the building has been very carefully considered, special attention being given to keeping down the cost of upkeep and obviating, as far as possible, any disturbance in the business of the bank by periodical re-decoration. The construction is as fire proof as it is possible to make it. Very little wood has been used. The windows will be of steel and bronze. The majority of doors on the ground floor will be of bronze also.

Notes on the Construction

The foundations presented many difficulties, owing to the nature of the soil in Shanghai. The loads in the treasuries will be variable; when full of silver the weight will be very great, but at times there may be only small quantities of silver stored. The weight of the central dome is also great. To provide against movement below these concentrated loads, piles 40-ft. long were driven, and to equalize the pressure on the soil as far as possible the remainder of the site has also been piled but with wider spacing between the piles. The foundations consist of a reinforced concrete raft, spreading the weight over the whole site. The main beams of this raft are 7-ft. deep.

The spans of many of the steel girders in the building are greater than commonly used in Shanghai, some of them being 52-ft. long. The superstructure is of steel frame construction with reinforced concrete floor slabs. The whole of the steel will be encased in brickwork or concrete for protection against fire.

Modern Innovations

The most up-to-date system of ventilation and warming has been adopted for these premises. Fresh air will be drawn in at suitable points and washed by passing through a water stream. In winter this cleansed air will be warmed and pumped through a system of ducts into the rooms. The vitiated air will be drawn out through a separate system of ducts and discharged above roof level. The air in the building will be changed twice an hour during the winter and six times an hour during the summer. Ozone will be added to the air before it is pumped into the rooms. The offices on the upper floors will be warmed by a low pressure hot water system with the addition of exhaust ducts and fans which will ventilate the offices, the vitiated air being discharged above roof level.

The latest electric derrick cranes are being used to expedite the construction of the building. The steel jibs are 90-ft. long, and the four cranes are so placed that there is not a point on the whole site which cannot be reached by either one or other of them. Steel stancheons, girders, and material generally are brought alongside by motor lorries and lifted and placed in position by the cranes without noise or interference with the work on the site.

The bank when completed will be equipped with all the most practical features of modern buildings, the architects having made a special study of similar buildings in England and the United States before completing their plans.

"Way-foong" at Hankow

Those Doing the Work

No record of the building would be complete without reference to the architects and contractors. The architects are Messrs. Palmer & Turner, and in undertaking the construction of so great a building they resolved to introduce a firm of foreign contractors in order to ensure the quality of the work and speed in carrying it out This scheme, which would do away with the eternal subletting of contracts, etc., which is a commonplace of building work here, was worked out by Lt.-Col. M. H. Logan, M.C., head of the Shanghai Office of Messrs. Palmer & Turner, and it is due to his initiative that we have seen what are to China new methods of construction. The immediate work of design is in the hands of Mr. G. L. Wilson, P.A.S.I., while the contractors are Messrs. Trollop & Colls of London.

In keeping with the high standard of design and construction of the new "Way-foong" building at Shanghai, although on a smaller scale, are the three buildings for the branch offices at Hankow, Dairen and Harbin. The Hankow building is already completed while the other two are in course of construction. Illustrations of these three buildings together with a brief description of their structural qualifications follow.

Harbin Branch

The above bank, which is now in the course of construction, occupies a fine corner site in the business district of Priestan Harbin and has frontages on the Polevaya and Vodoprovodnya.

The bank building, which is four stories in height together with a basement, is designed in the *Neo-Grec* style. The external elevations are treated in a simple and dignified manner, the authors relying more upon good proportion than over elaboration of detail. It has since been decided to dispense with the tower at the corner. The bank is entered at the corner and occupies the area facing the Polevaya with its southern aspect. The banking hall is carried up through two stories and has a balcony at the mezzanine level round two of its sides. Strong rooms are provided in the basement where also are placed the heating and electrical plants. The ground floor on the Vodoprovodnya front is occupied by Messrs. Jardine, Matheson & Co., who have their offices and showroom there. Over the bank hall and on the first floor Messrs. Butterfield & Swire have a combined office and flat whilst over the office

of Jardine, Metheson & Co., and on the mezzanine floor two bijou flats are provided for the junior members of the bank staff. The bank agent and the accountant are given the two flats on the second floor whilst the remaining flat on the first floor is planned for Messrs. Jardine, Matheson's agent.

Fire Resisting Construction

The building which is L shaped in plan has a three-storied Godown—built in reinforced concrete—in the rear. The bank building is constructed entirely in reinforced concrete and has been made fire-resisting. The outer walls are faced with artificial stone cast in blocks to represent stonework since it was impossible to utilize the local granite and the importing of Honan granite too expensive. The steel casements—supplied by Messrs. Crittall & Co., of London—are double throughout to cope with the severe winters and the heating installation—is on the high pressure vapour steam system. The contract for the lift and electric gear has been awarded to Messrs. John Richards & Co. The architects for both the Harbin and Dairen buildings are Messrs. Graham-Browne and Wingrove, A.R.I.B.A.

Dairen Branch

The above bank, which is also in the course of erection, occupies a good site on the Echi Gocho. The building is four stories in height with a basement for the strong rooms and heating and electrical plants. The bank entrance is placed centrally and the entrance to the offices and flats is on the west side. The plan is so arranged that the bank at present will only occupy about three-fourths of the ground floor area but should it be desired the whole of the ground floor can be used. The first floor will be devoted to offices. The second and third floors are to be used as flats, the bank's agent occupying the third floor. A flat roof garden completes the scheme.

The building is built in reinforced concrete and is made fire resisting. Steel casements—supplied by Messrs. Crittall of London—are double owing to the severe cold. Messrs. John Richards & Co. have been awarded the contract for the electric lighting and lift.

Town Planning in Malaya

SEVERAL months ago, says the *Malaya Tribune*, we published an exclusive article dealing with an interview with Capt. E. P. Richards, deputy chairman of the Singapore Improvement Trust, in which a rough sketch was given of the lines on which the Improvement Trust would work on town planning in this city The article aroused a great deal of interest at the time among those who were concerned to see Singapore a much better laid-out city than at present, and we undertook to keep our readers informed upon the subject from time to time. It is now of special interest to know that Mr. C. C. Reade (a descendant of the famous writer of that name), an Australian government town planner, who has been lent to the F.M.S. for a period of twelve months, is collaborating with Capt. Richards, and the problems with regard to the lay-out of Singapore and the centres of the F.M.S., will probably be treated as a whole.

Town planning is not a difficult matter when the ground is "new," when there are open stretches to map out. A systematic lay-out in such a case becomes a matter of course. But in Singapore and the other towns of Malaya the ground has been built on for a century almost without any system of lay-out whatever. Dwellings and godowns have sprung up anyhow and anywhere, streets and open roads have for the most part been cut-out with consideration only for immediate convenience and gardens and recreation grounds—all too few in quantity—have been scattered about without any thought as to the necessities of growing generations. These facts present tremendous obstacles, but we are assured, and we know the weight of the government is behind this, that they are not insurmountable.

Surveying the City

The government is contemplating vast changes in the future, especially with regard to the lay-out of Singapore. Capt. Richards has secured the services of a first-class man to help him in the survey of the city. It is being systematically divided into the proposed residential, business and recreation districts, and all the old survey plans, which are shockingly out of date, are being re-drawn and re-tabulated. Every part of the island is being examined with a view to its ultimate improvement. We are told that the way in which some of the godowns have been placed in Singapore, and the manner in which the unhealthy slums have been allowed to spread, is enough to fill the hearts of would-be reformers with despair, but the job is being tackled with enthusiasm on the part of Capt. Richards at least. A proper lay-out will be achieved even if it takes fifty years to complete it—there is no doubt it will take a long time. Capt. Richards himself thinks that in about ten years, perhaps less, we shall see substantial improvements.

The housing problem occupies a premier position in all these plans. Houses are being built at the present time under a watchful eye, with an ultimate idea of fitting them in with the orderly lay-out of the future. The building of godowns is under a neven more strict supervision, in order to prevent them encroaching upon intended residential quarters. Of course, landlords and the building interests, as expected are creating difficulties with their undoubtedly selfish objections, and, with the municipal and government records of the past, there are many misgivings as to how far they will be allowed to impede town planning. We know that in one or two concrete instances already Capt. Richards has succeeded in stiffening the backs of the authorities to good effect, such as in the proposed coastal road from Johnston's Pier to the docks. The governor himself showed that he was not lacking in ideas of progressive reform in consenting to allow the proposed Clemenceau-avenue to be taken through the grounds of government house.

Big projects are being planned, while the constitution of the Improvement Trust is being incorporated in a bill to be brought before the legislative council. This bill is almost completed and may form a big subject for debate when it is introduced. It will probably contain portions from the English and other town planning acts relative to the conditions in Malaya.

Growth of the Steel Corporation

The twentieth anniversary of the United States Steel Corporation calls attention to the remarkable development of the American steel industry. In 1920 the gross business totaled $1,755,477,025, or three times that of 1902. But although in two decades the Corporation doubled its tonnage capacity, its proportionate contribution to the country's iron and steel output has declined steadily. In other words, monopoly conditions are further off to-day than twenty years ago. Since July, 1920, each month has shown a decrease in the unfilled orders on hand: the amount was 6,284,765 tons on March 31, 1921, against 11,118,468 tons on July 31, 1920.

The Corporation's active furnace list has been cut in two since January 31, dropping from 99 to 50 on March 31; at present, ingot production is between 35 to 40 per cent. of capacity. Rails are a conspicuously active item in present steel output. During March the Gary mill turned out 92,600 tons of rails, thus establishing a world record for this particular product. Some of the large independent steel mills during March booked a tonnage about 25 per cent. in excess of February. The cut in steel prices announced April 12 by the Corporation may do much to stabilize the entire industry.

The Chinese Banking Group

A New Power in China

SHANGHAI CHINESE BANKERS' ASSOCIATION

The front row, from right to left (all sitting): 1 Y. M. Chien, Manager, Bank of Communication; 2 Sun Heng-fu, General Manager, Ningpo Commercial Bank; 3 Yih Kwei-chu, one of the Directors of The Chekiang Industrial Bank; 4 Chong Teh-chu, one of the Directors of the Shanghai Commercial and Savings Bank; 5 Kiang Shiou-feng, Manager, Chung Hua Commercial and Savings Bank; 6 Nieh Yuen-fu, Manager, Salt Industrial Bank; 7 Shen Cho-shu, Manager, The National Commercial Bank; 8 Chiang Yi-chu, one of the Directors of the National Commercial Bank; 9 Yih Wu-shiao, Manager, The Continential Bank; 10 Li Fo-sun, Manager, The Chekiang Industrial Bank; 11 Chow Yung toong, Assistant-Manager, Young Brothers' Banking Corporation; 12 Sun Chin-si, Manager, Chung Foo Union Bank.

The back row, from right to left (all standing): 1 Yao Chung-pah, Secretary, Chinese Bankers' Association of Shanghai; 2 Hsu Chi-chin, Assistant-Manager, The National Commercial Bank; 3 Yang Teng-fu, Assistant-Manager, The Shanghai Commercial and Savings Bank; 4 ; 5 Chen Lu-chen, Assistant-Manager, The Bank of East Asia; 6 K. P. Chen, General Manager, The Shanghai Commercial and Savings Bank; 7 Wang Kung-quan, Chief Accountant, Bank of Communications; 8 Wang Tze-sung, Assistant-Manager, Bank of Communications; 9 ; 10 ; 11 ; 12 ; 13 ; 14 Woo Yung-cha, Assistant-Manager, King Cheng Banking Corporation; 15 ; 16 ; 17 Hsu Chong-sui, Editor, *Bankers' Weekly*; 18 Chu Pao-chien, Assistant-Manager, The Chekiang Industrial Bank.

WHILE the consortium is marking time, awaiting the unification of North and South as a basic requisite for lending funds to Peking, the Chinese authorities have turned to the domestic money-lender in order to tide over their more urgent requirements. In the past, banking in China was more or less of a pawn-broking proposition where high rates of interest were offered for deposits and usurious rates exacted from the borrower. For this reason, it was most difficult to interest the native capitalist in government loans bearing a paltry five per cent. interest, when twenty-five or more could be readily obtained through time-honored channels of business. Invitation after invitation to the Chinese investor to purchase his government's railway and other bonds issued in the past by foreign banks, have been coldly declined. Apart altogether from the disinclination to place their money in these foreign directed enterprises which in some cases impaired their sovereign rights, the astute Chinese, preferred to risk their hoardings in the old pawn-shops and other purely native enterprises, where, despite official exactions, taxes, levies and other oppressive burdens, the profits were many hundred per cent. larger than the returns from these foreign railway and administrative loans to their own government. As long as such conditions prevailed, it was hopeless to expect that Chinese capital would be induced to come to the assistance of its government for the development of railways, industries, or reorganization purposes.

Feng Kun-kwang
President of the Bank of China

Came the war, and aside from the purely Japanese advances to the Tuan ministry, the foreign money market was closed to China. Little by little the government was more and more forced to seek accommodation from the native banks which had blossomed forth as a result of war prosperity, and conform to the traditional conception of proper interest charges. With an impecunious government always in the

Y. M. Chien

Manager of The Bank of Communications, Shanghai, and Vice-Chairman of the Shanghai Chinese Bankers' Association

Shen Cho-shu

Manager of The Chekiang Industrial Bank, Chairman of the Shanghai Chinese Bankers' Association

Chen Kwang-fu

Manager of the Shanghai Commercial Savings Bank, and ex-Vice-Chairman of the Shanghai Chinese Bankers' Association

market for short-term loans secured on treasury notes, the native banks made huge profits by catering to this business. A recent report on the operations of the native banks in Peking for the last business year, comes as a revelation of the profits accrueing as a result of the government short-term borrowings. The rate of interest charged the government for these accommodations varies between 15 and 30 per cent. Not one of the Peking banks operated at a loss, while every employee received a substantial bonus at the end of the year, in some instances, to the amount of six times his salary. The following list taken from Chinese sources gives some idea of the prosperity of the Peking banks, whose business has been practically confined to government advances.

Name of Bank	Net Profit	Paid to Members for $1.00
Tunglu	$750,000	$6.50
Hsinhua Savings	700,000	2,60
Talu	450,000	2.80
Hsinheng	650,000	2.70
Wuchu (Five races)	150,000	1.50
Tasung	250,000	2.80
Nengkung	150,000	2.50
Minghua	250,000	2.80
Chihchung	150,000	1.30
Paoshang	200,000	1.70
Yenyeh (Salt)	1,300,000	4.50
China	4,500,000	—
Communications	2,500,000	—

In the case of the last two banks the amount to be paid to members awaits the decision of the shareholders.

It is no wonder then that we read of the organization of new banks on all sides, a rush to get in on the ground floor and participate

F. S. Yih

Manager, The Continental Bank, Shanghai

Sung Han-chong

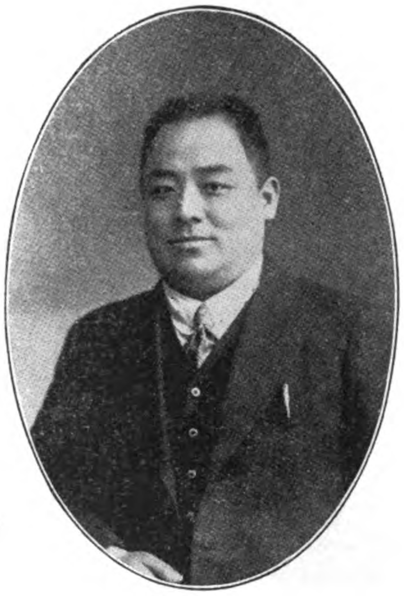
Manager of The Bank of China. Ex-Chairman of the Shanghai Chinese Bankers' Association

Woo Chai-chang

Sub-Manager, Kincheng Banking Corporation

Lin Ying-cha
Chairman of the Board of Directors of the Hwa Foong Bank

Fan Shou-san
Manager, Hwa Foong Bank



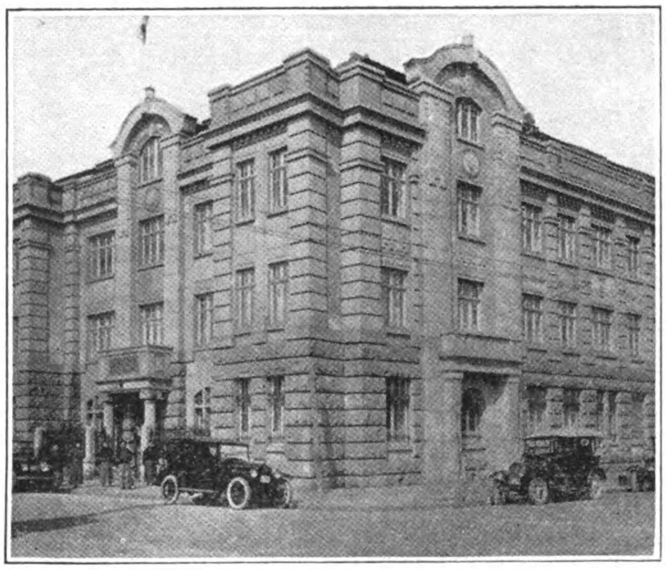
L. S. Fan
President and General Manager of The Continental Bank of Tientsin

in the cutting of the melon. It is only necessary to turn to the columns devoted to commercial finance in recent numbers of THE FAR EASTERN REVIEW, and count the new native banks being organized, to gather an idea of the wide-spread activities in this line. Following the precedent set by the Bank of China, Bank of Communications and the Salt Bank a Wine and Tobacco Bank is to be established, as the repository for taxes collected from these sources. We have Pawn-Brokers' Banks, a Commercial Silk Bank, Industial Bank, Agricultural and Labor Banks, and so on, indicating a tendency on the part of the various guilds to have their own financial institutions. In addition, the shrewd Chinese officials, are casting an anchor to windward by encouraging the establishment of Sino-foreign banks, and to the original Russo-Chinese Bank, we now have a Sino-French Bank, a Sino-American, Sino-Italian, Sino-Belgian, a Sino-Danish-Norwegian, not to speak of various Sino-Japanese banks and industrial companies, all of which can be depended upon for short-term loans to a needy government.

Small loans from all these sources have been successfully floated from time to time and encouraged the government to hold out against approaching the consortium for a more substantial advance. China has therefore been compelled to depend more and more upon her own resources to meet pressing obligations, and from this viewpoint, the consortium has undoubtedly been of inestimable value to the future of the country. Once the Chinese mandarin and medal-bedecked tuchun realize that civil war as a profession is unprofitable and must be paid for out of their own pockets, that foreign bankers cannot be cajoled or blackmailed into advancing huge reorganization or disbandment loans after each fresh revolt, there is hope that an end will come to these periodic disturbances which keep the country in a state of unrest and the masses in poverty.

As a result of the government's internal borrowings and a desire to keep the consortium from doing business the Chinese bankers have come together and formed a group for underwriting official loans. The organization of this group has been welcomed by the consortium who have invited its co-operation in the flotation of future government issues. The group is composed of the Chinese Bankers' Associations of Peking, Tientsin and Shanghai. Its membership is not fixed but adjusted to meet the various loan

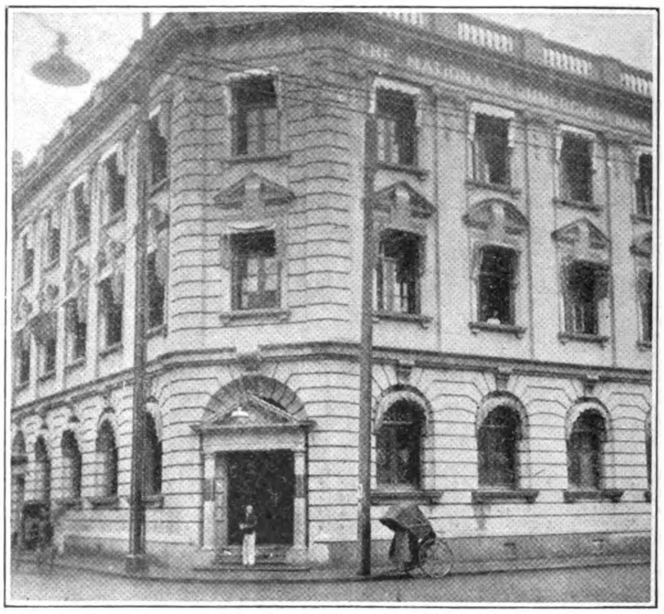
Zung Lan-pu
General Manager, Tung-Lai Bank, Shanghai



Head Office of the Tai Lai Bank, Tsingtao

Woo Wei-zui
Manager, Tung-Lai Bank, Shanghai

Shu Chin-min
Sub-Manager, National Commercial Bank, Shanghai

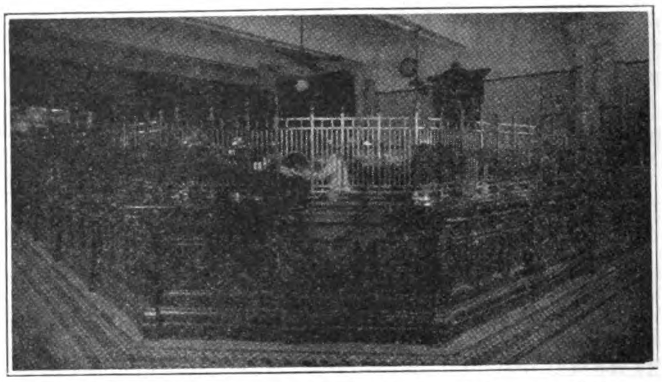


National Commercial Bank Building, Shanghai

K. C. Yeh
Chairman, National Commercial Bank

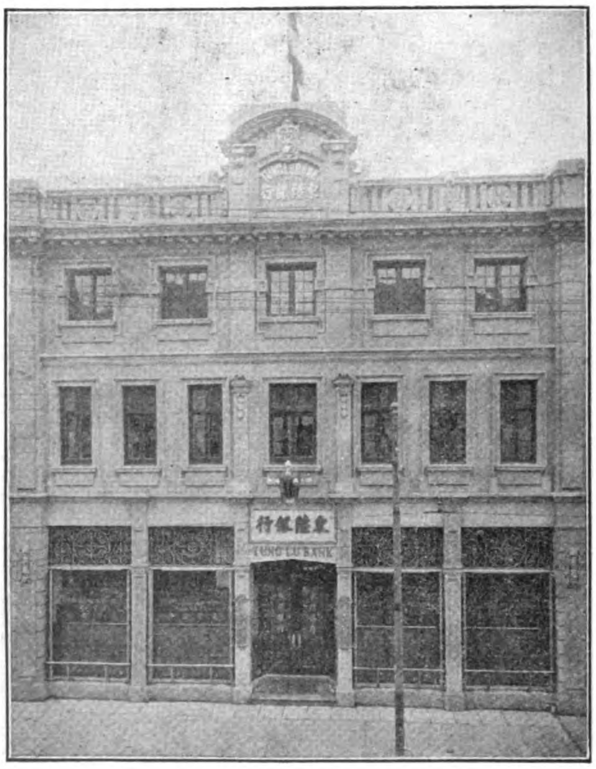
propositions as they arise. For instance, the group who entered into the "Rolling Stock Loan" with the ministry of communications is composed of the following banks:—Bank of China; Bank of Communications; Sin-Hua Savings Bank; King Chen Banking Corporation; Pao-Shong Bank; The Continental Bank; Sin Hung Bank; Chung-Foo Union Bank; The National Commercial Bank, Ltd; Commercial Bank of China; Shanghai Commercial and Savings Bank; Chekiang Industrial Bank; Ningpo Commercial Bank; Tung-Lai Bank; Peking Commercial Bank; Dah-Sun Bank; National Industrial Bank of China; Tung-Lu Bank; Young Brothers Banking Corporation; Dah-Wen Agriculture and Labor Bank; Chiu-Nih Bank; and the Pieh-Nih Bank.

The success attending the handing of these short-term government obligations has undoubtedly contributed more towards opening the eyes of the Chinese to the immense possibilities of modern banking than anything else, and although the group is not sufficiently strong to meet all the demands of the authorities, it has been able to stave off many serious situations. How long this can continue is difficult to say, but a test of its strength must arise during the present year as some of China's heavy outstanding



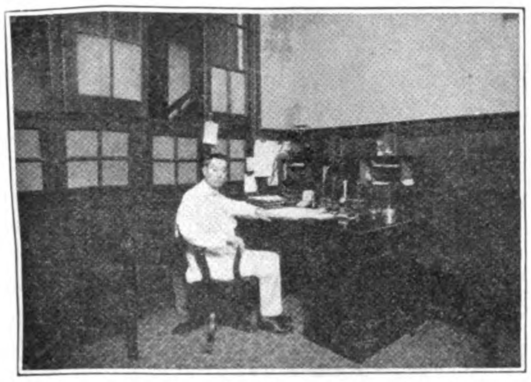
Banking Department of The National Commercial Bank, Shanghai

Chu Pa-fong
Manager, Tung Lu Bank, Shanghai

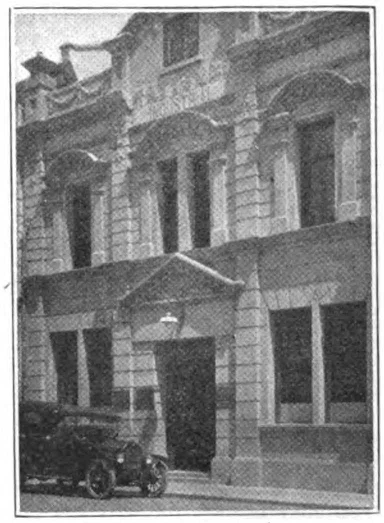


Tung Lu Bank Building, Shanghai

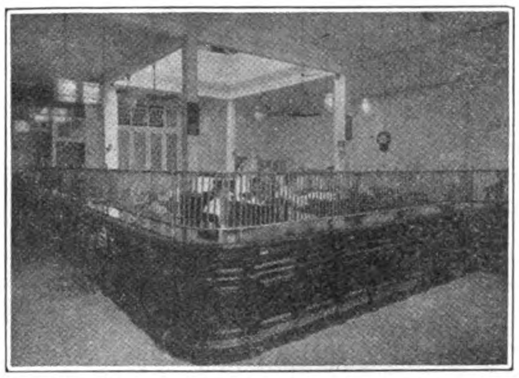
T. N. Lin
Sub-Manager of the Tung Lu Bank, Shanghai



Manager's Office, Chekiang Industrial Bank, Shanghai

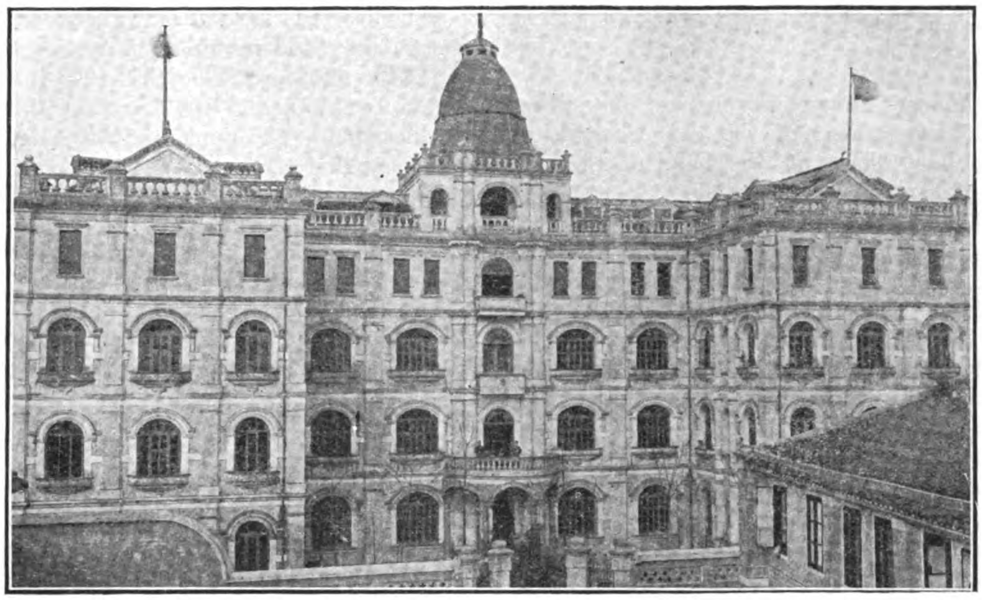


Chekiang Industrial Bank Building, Shanghai



Banking Department, Chekiang Industrial Bank, Shanghai

obligations fall due. Although sufficiently strong to help tide over the government by short-term loans secured on treasury or revenue notes, it is hardly to be expected that the time has arrived when these Chinese banks could underwrite any considerable long-term loan whose bonds would have to be sold to the public at a low rate of interest. The fact that a beginning has been made in financing the temporary and pressing requirements of the government, is, in itself, a good augury for the future, and little by little with their growth, we may expect these Chinese banks to take an increasing participation in the more important financial transactions.



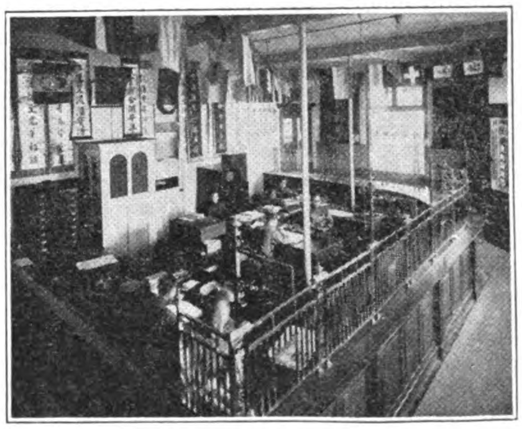
Head Office Building of the Young Brothers' Banking Corporation at Chungking, Szechuan

We are undoubtedly at the threshold of a new epoch in the Far East, in which it is not difficult to look ahead and forsee the day, fifteen, twenty years hence, when these Chinese banks expanding from their present humble position, will increase their reserves and capital, and dominate the business of their own country, and, as Chinese merchants and manufacturers enter more and more into foreign trade with branches in other countries, the day must also arrive, when, like other nations, they will be followed by their banking institutions. This may not have been part of the consortium program, but there can be no argument on the statement that the disinclination of this international group to lend money to China at this time has brought the official and capitalist class together in closer union to solve their own problems. This has been facilitated no doubt from the fact that for the past eight years most of the wealth of the country has been absorbed into the pockets of the officials, who, in turn, have invested the funds in new enterprises and banks. In many cases, it is clearly evident that Chinese private enterprises are but thinly disguised official undertakings financed by the tuchuns or other officials with funds squeezed from the revenues. Undoubtedly, a close community of interests exists be-

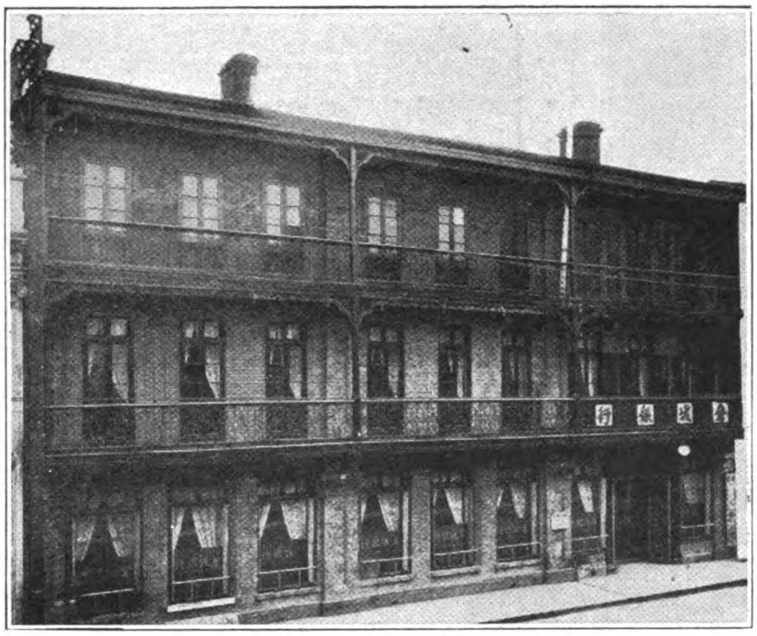
Manager's Office of the Young Brothers' Banking Corporation, Shanghai

Y. F. Chow

Manager, Young Brothers' Banking Corporation, Shanghai



Banking Office of Young Brothers' Banking Corporation, Shanghai



The King-cheng Banking Corporation

tween the officials and many of these new banks, but nevertheless, there is a sufficient element of the old conservative, dependable Chinese merchant class at the helm of these institutions that provides a guarantee of stability, if not pushed too hard by powerful official stockholders.

Notwithstanding the official element in the make up of the new banking organizations, it may safely be said that these banks have become a force that their government and foreign interests will have to reckon with more and more as time goes by. Already, they are taking an active part in suggesting and insisting upon reforms. Typical of this movement were the resolutions recently adopted at a Second United Chinese Bankers' Conference held at Tientsin, where 26 delegates representing the local associations of Tientsin, Shanghai, Hankow, Tsinanfu, Hangchow and Pengpu, met and discussed for three days the enactment of legislation and enforcement of reforms sadly needed to facilitate national financial reconstruction, and the organization of co-operative institutions amongst their own bodies.

The memorials passed for presentation to the government asking for new legislation give an idea of the intelligent trend of the movement. Among them we find, (1) legislation regulating the issuance of bank notes; (2) abolition of the tael unit in favor of the dollar; (3) exemption from transportation fees on all bank note and specie shipments from one bank to another; (4) cessation of the mining of the old style silver and copper currency; (5) revision and amendment of the banking laws and (6) enactment of laws governing the issuance of cheques and promissory notes. It was also resolved and passed by the conference that clearing houses should be established in the principal cities, constitutions of banking associations made uniform, a bureau of information established to ascertain the financial standing of business firms, and a standard technical terminology for banking business adopted.

In this conference, delegates from only six cities attended, but as the movement extends and the banks of Yunnan, of Szechuan, of Kansu, of Shensi and Shansi and the southern provinces, are brought into the union and lend the weight of their influence to good government, which in China is inextricably interwoven with finances, a power will be created that even the most stubborn and reactionary tuchun or war-lord will have to give heed to.

Following shortly on the heels of the above conference, the Shanghai Chinese Bankers' Association took independent action on the copper coinage scandal and telegraphed to the ministry of finance and the revenue department requesting (1) that mints be ordered to abide by the mining laws, (2) that copper coins be made of standard weight, (3) that only enough coppers for consumption on the market be coined, (4) that secret minting be stopped, and (5) that the importation of coppers be prohibited.

That the foreign banks have awoke to the situation created by the rise of so many strong native banks, is attested to by a meeting of the Foreign Bankers' Association of Shanghai held recently to consider the advisability of forming an International Banking Association which will include all the Chinese as well as the foreign banks. As a result of these deliberations it is extremely probable that such an association will be formed. As the *North-China Daily News* truly comments in reporting the meeting "the importance of such a body can hardly be overestimated as the combination would be able to exert an influence on financial matters in China with such weight, that Peking or the provinces would have to take notice. The mere fact that such a combination has been favored at this time by the foreign bankers is, in itself, sufficient evidence of the great influence the Chinese banks are exerting in the financial field. Gone are the days, when the foreign bank can safely turn down the Chinese bank order for deposit. A new order of things is being evolved, one which compels respect and co-operation."

It is only natural that in Shanghai will be found the most important of these Chinese banks, and the following list of members of the local banking association will give some idea of the numbers and resources of these institutions:—

Bank of China, The Chekiang Industrial Bank, Chung Foo Union Bank, Chung Hua Commercial and Saving Bank, Sin Hua Savings Bank, The Bank of East Asia, Bank of Communications, The Shanghai Commercial and Savings Bank, Young Brothers' Banking Corporation, The Bank of Canton, Tung Lai Bank, The National Commercial Bank, Salt Industrial Bank, Ningpo Commercial Bank, King Cheng Banking Corporation and the Continental Bank. These banks have all entered the Association as members under strict conditions of qualification.

British North Borneo Railway

THE revenue earned by the railway in 1919 was £26,931, or £3,183 higher than in the previous year. The expenditure amounted to £35,711, or £3,502 more than in 1918. The deficit therefore shows a small increase of about £300. The bulk of the increase in working expenditure is accounted for by war bonuses to the staff and by the continuous rise in the cost of materials. From the figures supplied it was evident that no great hope for any reduction in railway expenditure, but on the contrary it is expected to mount still higher. Retrenchment has in recent years been practised to the utmost extent, and the time has arrived when certain arrears, such as renewal of sleepers and the overhauling of bridges, can no longer be postponed. Capital expenditure on the railway in 1919 amounted in round figures to £5,300, as compared with £1,400 in the previous year. The capital value of the railway appears in the balance sheet as £779,616, or £6,237 per mile, which is still a moderate figure for a tropical railway of similar dimensions.

A beginning has been made on some of the schemes of development which the president outlined on a former occasion. Unfortunately, it has been found impossible to engage contractors from Singapore, owing to their being fully occupied with constructional work in their own colony. It has therefore been necessary to form a separate department, which will be under the direction of Captain Watson, and a large outlay in plant and machinery, steam-rollers, etc., will be entailed. But, in spite of these obstacles, the development program will be vigorously pursued, except, where as in the case of lighthouses, prices are so prohibitive as to compel postponement for a time. Road construction is being kept well to the fore, the main trunk road and the Jesselton-Tuaran road receiving first consideration. The provision of an improved water supply for Sandakan also occupies a prominent place in the program. A site for the new reservoir has been decided upon, and it is proposed to obtain water by means of artesian wells.

The Steam Turbine in China

By H. J. Smith, M.I. Mech. E.

Introduction

TO the engineer of Shanghai Municipal Council, perhaps more than to any other individual, belongs the credit of introducing turbo-generating machinery into China. The installation of steam turbines as prime movers for the generation of electric light and power initiated by Mr. T. H. U. Aldridge at the Riverside plant, is certain to have a marked effect in moulding the policy of power users in this country.

The noble proportions of the larger reciprocating units are already regarded as relics of the past; the modern tendency being to use the kinetic energy of steam for turning small rotors at high velocities instead of using its dynamic force to move a ponderous mass, turbines of 50,000 H.P. are now at work. Imagine a horizontal steam engine of this size and the building required to house it!

It may be interesting, before considering in detail some of the turbo-electric machinery now at work in China, if we trace the history of the steam turbine from the experimental stage to its present development. The first turbine of any utility was put on the market in 1883 by a Swedish engineer named De Laval. It followed closely, and was no doubt based upon, some experiments carried out in Italy by Giovamni de Branca in the 17th Century. But this engine had the insurmountable defect of being suitable for a small output only. Something larger was necessary and it came through the conception of a British engineer (C. A. Parsons), who in 1884 produced the multi-stage *reaction* type of turbine which bears his name. The next inventor was Rateau, a Frenchman, who made a multi-stage *impulse* type of turbine and from these two types the present-day machines have grown.

The principle of the steam turbine may be explained simply as follows: Imagine steam, under a pressure of 150-lbs. per sq. inch, released to atmosphere through a pipe; like water squirting from the fireman's hose. The sudden expansion of this steam would be equal to a velocity of 2,800-ft. per second. If we cause this steam to impinge on the blades of a turbine wheel we shall convert its kinetic energy into rotary motion by using the leverage of the wheel to rotate the shaft to which it is fixed. All turbines are based primarily on this idea; but such a method would be wasteful in the extreme. Instead of the steam being released at once from boiler to atmospheric pressure it is lowered in stages from the initial pressure into a partial vacuum, and the newly acquired kinetic energy caused by each stage of the expansion is arranged to impinge on the blades of a separate wheel in each stage, the power so gained being the sum total of all the energy expended by the steam on, say, 2,000 blades; each blade serving as the end of a lever acting on a single fulcrum, namely, the axis of the turbine shaft.

Types

There are at present four different methods for obtaining this result. They are—

(1) The Rateau type built up of pure Rateau (impulse) stages only.
(2) The Parsons type built up of pure Parsons (reaction) stages only.
(3) The Curtis-Rateau turbine having one velocity wheel and a number of Rateau stages.
(4) The Curtis-Parsons turbine having one velocity wheel and a number of Parsons stages.

In the Parsons turbine (Fig. 1) the steam does not expand from high pressure to exhaust pressure in one set of nozzles, but the total available pressure drop is divided into small partial pressure drops. The steam admitted to the turbine expands in the first guide blades to a certain extent, the kinetic energy thus developed being utilized in the following row of moving blades; at the same time the expansion continues in the moving blades, so that another pressure drop takes place in the moving blades. After the moving blades there is another set of guide blades in which further expansion takes place, followed by another set of moving blades with further expansion. One set of guide blades and one set with corresponding moving blades forms one stage.

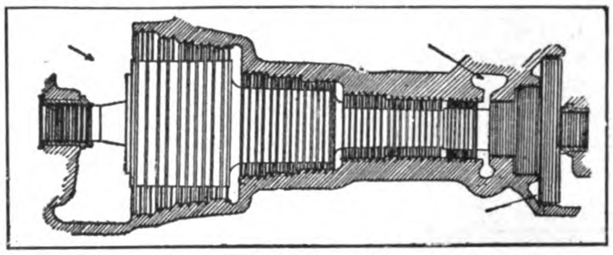


Fig. 1.—Section through a Reaction Turbine

In the Rateau turbine (Fig. 2) the available pressure drop is also subdivided into small pressure drops. The steam is admitted to a set of nozzles in which it partially expands, and the kinetic energy gained by the expansion is utilized by a moving wheel provided with blades on which the steam from the nozzles impinges. After passing through the wheel the steam enters another set of nozzles or guide blades in which a further pressure drop takes place, and the kinetic energy is utilized in the following wheel, this being repeated several times until the exhaust pressure is reached. One set of nozzles or guide blades with one rotating wheel forms a stage, and a number of such stages a Rateau turbine.

The Rateau turbine permits of much fewer stages to obtain the same efficiency as the Parsons turbine, and consequently the Rateau turbine is considerably shorter and has an enhanced rigidity and safety.

The Curtis turbine (Fig. 3) is an impulse turbine consisting of two or more stages. Each stage consists of a set of nozzles where the steam expands and of a wheel carrying two or more rows of moving blades. The steam issuing from the nozzles strikes the first row of moving blades and transmits a large portion of its kinetic energy to the rotating disc. It then passes through guide blades fixed to the turbine casing and is projected on to the second row of moving blades of the velocity wheel. This is repeated if there are more rows of blades on the wheel.

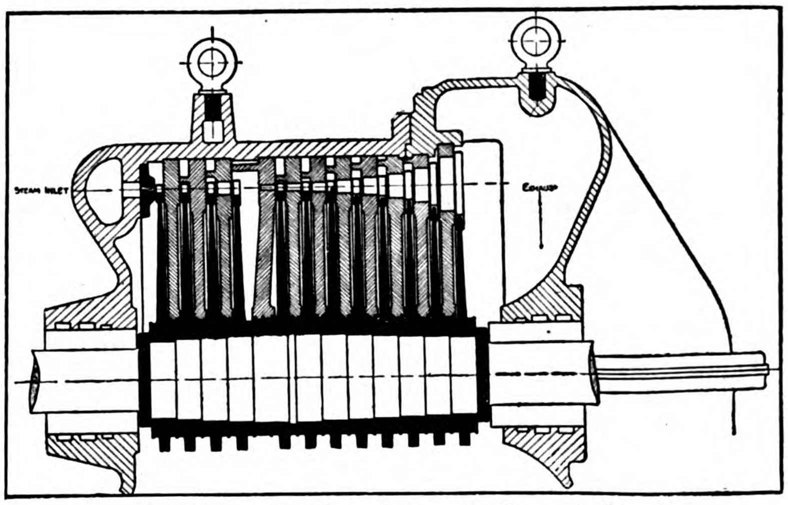


Fig. 2.—Section through Impulse Type Turbine

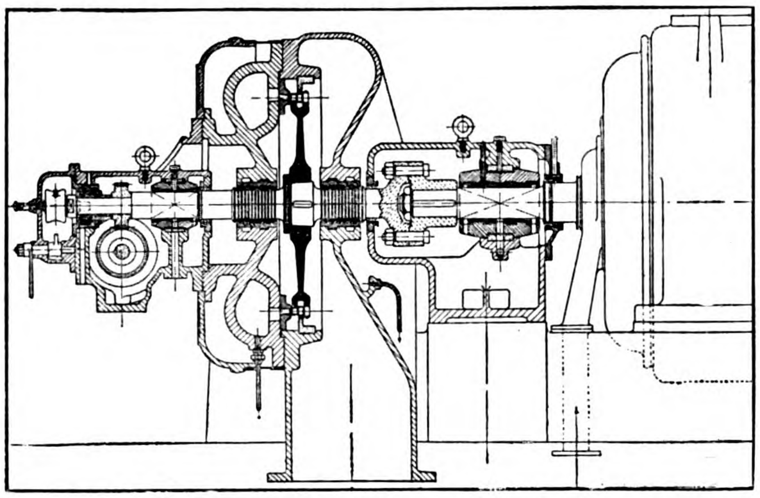


Fig. 3.—Fraser & Chalmers Curtis Turbine

The modern tendency is to combine one velocity wheel in the high-pressure part of the turbine with a number of Rateau stages (Fig. 4) or Parsons stages in the low-pressure part. Although, speaking generally, the velocity wheel is less efficient, it can be designed in many instances so as to have the same efficiency as the Rateau or Parsons stages in the high-pressure part of the turbine.

Development

We will next trace the development of the steam turbine as an economical and reliable prime mover along two lines, namely, size and efficiency. Regarding size, the first Parsons turbine developed 10 H.P. when running at 18,000 revs. per minute. In 1898 a plant was built for an output of 1,000 K.W. the speed being 1,500 revolutions per minute.

About 1906 the speed remained the same but the size had grown to 5,000 K.W. By 1912 the size had reached 12,000 K.W. and one of the leading British manufacturers produced the first 5,000 K.W. unit to run at 3,000 revolutions per minute. The same firm then built an 8,000 K.W. turbine to run at this speed and afterwards a 12,000 K.W. unit. They also constructed for the Glasgow Corporation a 25,000 K.W. set to run at 1,500 R.P.M. This last size is not the limit, as there are no mechanical limitations to prevent the building of a 50,000 K.W. set. Only the cost per kilowatt will be the deciding factor as regards size. In the matter of efficiency the results are equally remarkable. The first Parsons turbine, when using steam at 60-lbs. pressure and exhausting against atmosphere used a steam consumption equal to 200-lbs. per kilo watt hour, or a turbine efficiency of only 15 per cent. By the time turbines had reached the 1,000 kilo watt size the steam consumption had been lowered to 20.1-lbs. per kilo watt hour, this being equal to a turbine efficiency of 54 per cent.. In 1910 British machines of the same size had reached an efficiency of 66 per cent. and this had been improved by 1915 to 73 per cent. To-day we can get 75, 76 and 79 per cent. according to the size of unit and a 5,000 K.W. turbine will now produce one B.H.P. per hour for one pound of good coal. These figures can still be improved upon to some extent, although anything like 100 per cent. is not obtainable. The friction caused by the flow of steam through the valves is a certain loss. The shock of steam impinging on each turbine blade means loss through setting up eddying currents which interfere with the flow of steam. Then there is the skin

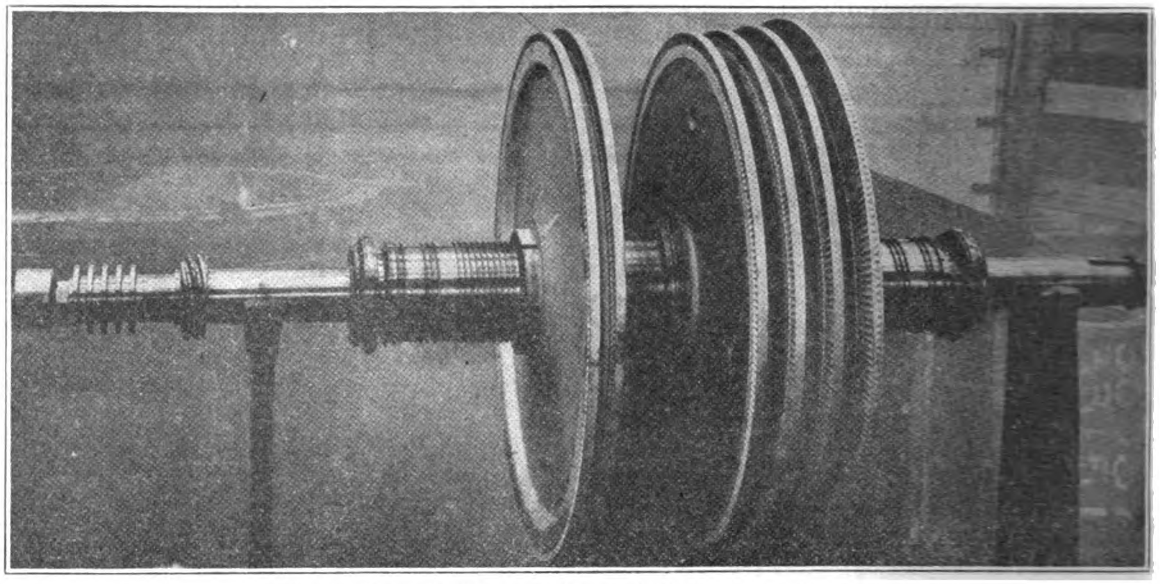


Fig. 4.—Velocity Wheel in Fraser & Chalmers Turbines

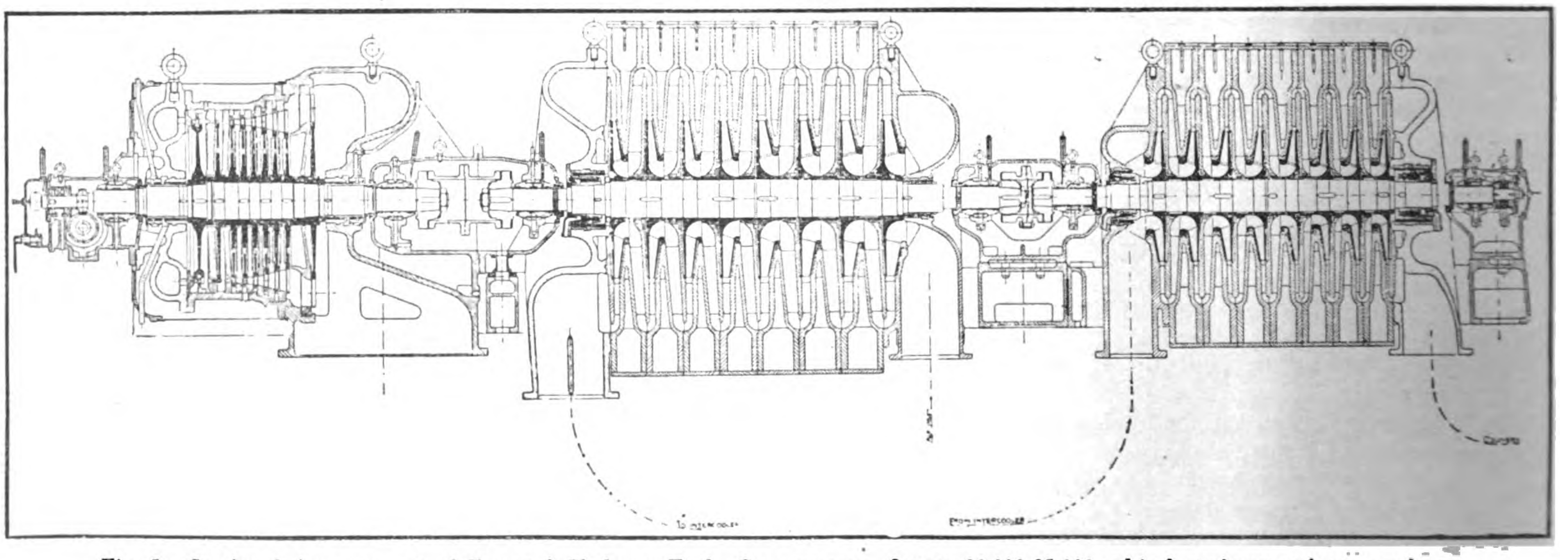


Fig. 5.—Sectional Arrangement of Fraser & Chalmers Turbo-Compressor. Output 20,000-25,000 cubic feet air per minute against a pressure of 100-110 lbs. per square inch.

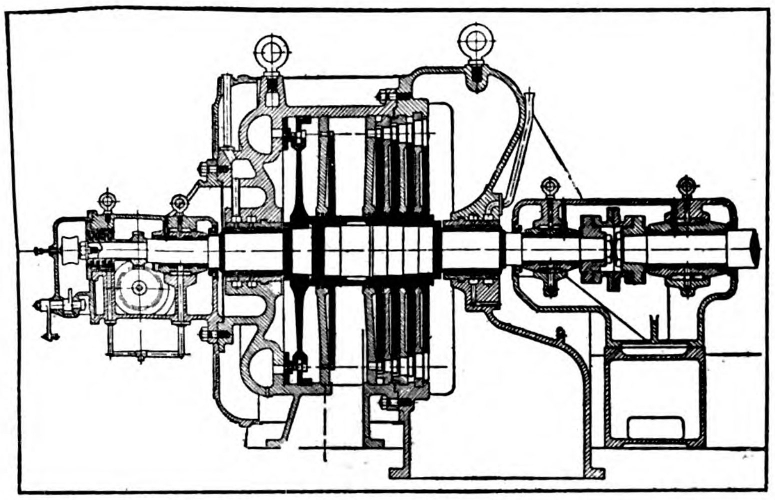


Fig. 7.—Section of a Mixed Pressure Turbine

friction of the turbine discs revolving at high velocities.

All the above added to leaks through glands and bearing friction amount to a total of about 25 per cent., sometime more sometimes less, so that the average efficiency of a turbine may be considered about 75 per cent.

Where, then, it may be asked, will the improvement come from? We will take an actual instance where a certain turbine is working with dry saturated steam at 100-lbs. pressure and exhausting to a partial vacuum of 27½ inches. The steam consumption is 16.4-lbs. per K.W. hour. Now imagine this turbine fed with steam at 300-lbs. pressure, superheated another 250°F., and the pumps altered to pass sufficient cold water through the condenser to maintain a vacuum of 29 inches. The steam consumption under these new conditions would now be only 10.2-lbs. or a saving in the coal bill of nearly 38 per cent. and the turbine has not been altered.

Such thoughts may lead to the conclusion that we are in the hands of the boiler-maker, but the improvement set forth by the writer is not supposition; it is being done in Great Britain to-day. It may be improved upon shortly because years of experiments a British water-tube boiler has been perfected which burns the commonest coal to almost perfect combustion and raises steam to a pressure of 350-lbs. to the square inch. The steam can then be superheated to a temperature of 750°F., and neither boiler-makers or turbine designers will be any more nervous than they were when working under the old conditions.

It will be realized that it is not only necessary to consume coal to the best advantage. We must also transport it, unload, store and feed it to the boilers in the most economical manner possible. This matter is outside the scope of the present article but those interested in handling minerals in bulk can read the author's remarks on the subject in another place.*

* *Engineering*, January 28th, February 4th and 11th, 1921, also *The Electrician*, December 31st, 1920.

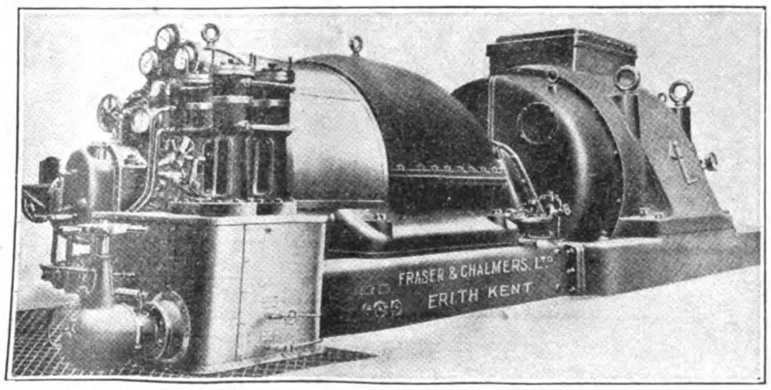


Fig. 8.—Fraser & Chalmers Turbo-Alternating Generator, 3-phase, 50-cycles, supplied to the Shanghai Municipal Electricity Works, by the Agents, The General Electric Company of China, Ltd. Capacity, 5,000 K.W., 6,250 K.V.A., 6,600 volts, 3,000 r.p.m.

Special Types

We will now consider the steam turbine from another point of view, namely, its ability to generate power from waste or low-pressure steam. It is not generally realized that 20,000-lbs. of steam exhausted from a non-condensing engine can be utilized in a low-pressure turbine to nearly equal to 10,000-lbs. of steam at 150-lbs. boiler pressure. Until recently the steam exhausted from large colliery engines used to be allowed to escape to the atmosphere. Such waste is no longer tolerated on a modern plant. The steam is led either to a low or a mixed pressure turbine and coupled to a generator for supplying electric light and power all over the mine.

These low-pressure turbines, although similar in many respects to the high-pressure type, have a smaller number of stages with no velocity wheel. In the case of an intermittent supply as from a rolling mill or winding engine, a heat accumulator can be installed with advantage.

The heat accumulator receives the steam from the winding or other engines; part of that steam is condensed while the main steam engine exhausts into the accumulator, and is again evaporated when the steam engine ceases to supply the steam. The intermittent condensation and evaporation in the accumulator equalizes the steam supply to the steam turbine.

A mixed pressure turbine (Fig. 7) works with steam from two sources. Live steam can be admitted to the first stages and low-pressure steam to the low stages, the turbine being arranged to work independently on either high or low pressures or a mixture of both. The continuity of operations is ensured automatically by special governing arrangements, the turbine taking low-pressure steam only so long as there is sufficient available; otherwise high-pressure steam is admitted from the main boilers. The economy of using such a machine in conjunction with the large steam units to be found in cotton mills, paper mills, steel works and mines is obvious.

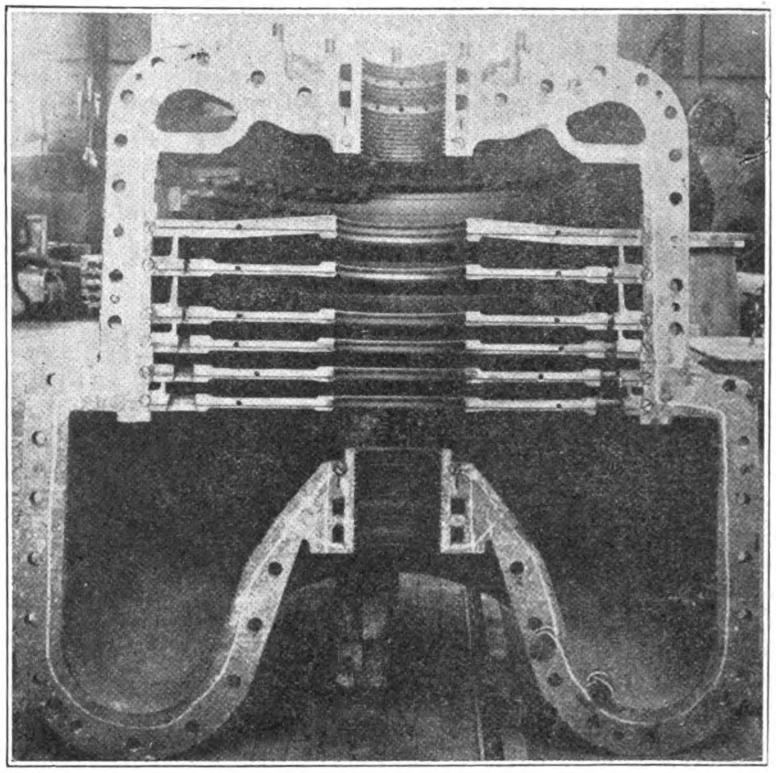


Fig. 9.—Turbine Casing with Top Half Removed

Where steam heating and power are required at the same time, either a back pressure or a pass out bleeder turbine could be installed with advantage. The back pressure turbine is a simple and inexpensive arrangement, one velocity wheel being in most cases quite sufficient to get the result required. In the reducing or bleeder turbine part of the steam is allowed to leave the casing after doing work in the high-pressure portion of the turbine.

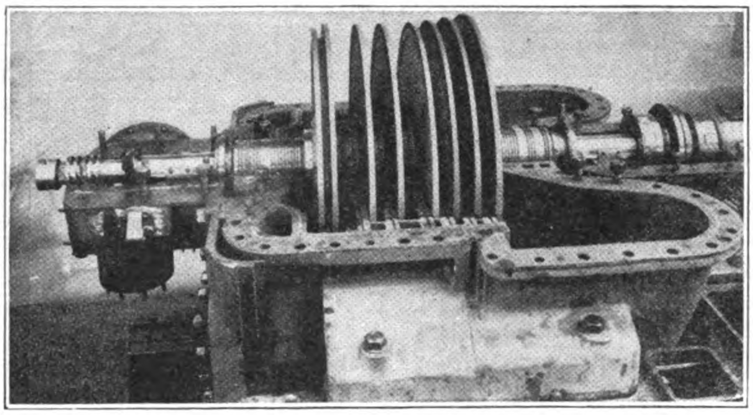


Fig. 10.—Top Half of Turbine Casing Removed Showing Rotors

In this connection it should be noted that steam exhausted from a turbine to the heating system contains no oil or foreign matter as is always the case with reciprocating engines.

Amongst the numerous other examples where the steam turbine can be installed with the best results the exigencies of space will only allow mention of the arrangement adopted for sea-going craft. The marine turbine has little material difference to the types already described, except that some manufacturers divide the turbine into two casings. The high-pressure casing contains one velocity wheel and three single stage wheels for the ahead turbine and one velocity wheel only for the astern turbine. The steam from the high-pressure casings is led by means of pipes to the low-pressure casings. The ahead turbine in the low-pressure casing consists of five single wheels, whilst two are placed in the astern casing. The steam from the low-pressure casings goes, of course, to the condenser. Each rotor drives a double speed reduction gear. The writer hopes to go further into the detail of turbines for special purposes in a future article.

Chinese Plants: Shanghai

Reverting now to that part of our subject which concerns the description of turbines actually installed in China we will take as example the 5,000 K.W. set for the Shanghai Municipal Council and the 1,500 K.W. sets installed for the Han Yeh Ping Iron & Coal Co. at their new Tayeh Works. A description of turbo-blowers (Fig. 15) supplied to the same company must wait for another opportunity.

A Fraser & Chalmers turbine supplied to Shanghai is rated for an output of 5,000 K.W. at 3,000 R.P.M., and an overload of 25 per cent. to be obtained automatically when supplied with steam at 180-lbs. pressure and superheated to 570°F. The alternator is direct coupled to the turbine by a claw type flexible coupling and is designed for an output of 6,250 K.V.A. when running at 6,600 volts, and 80 per cent. P.F. The periodicity is 50 cycles per second. This alternator is totally enclosed, the ventilation and cooling being arranged by drawing cold clean air through an Heenan wet filter and forcing it through the core and windings of the stator and rotor by means of fans fixed to the rotor shaft. Automatic gear takes care of the pressure regulation and resistance is provided for the alternator and exciter fields, the former being operated either by hand or a small direct current motor.

The condenser is of the surface type with a cooling area of 12,000 square feet. It is designed to maintain a vacuum of 28½ inches when dealing with 65,000 pounds of steam per hour if supplied with not less than 8,670 gallons of water at a temperature not exceeding 80°F.

It will be seen by the illustration that the Fraser & Chalmers turbine (Fig. 8) is provided with an horizontal joint so that the top half of the casing can be lifted bodily with the top half of the diaphragms (Fig. 9) and so expose the rotor for complete inspection (Fig. 10). The connection between the lower casing and the condenser is so arranged that all movements due to contraction

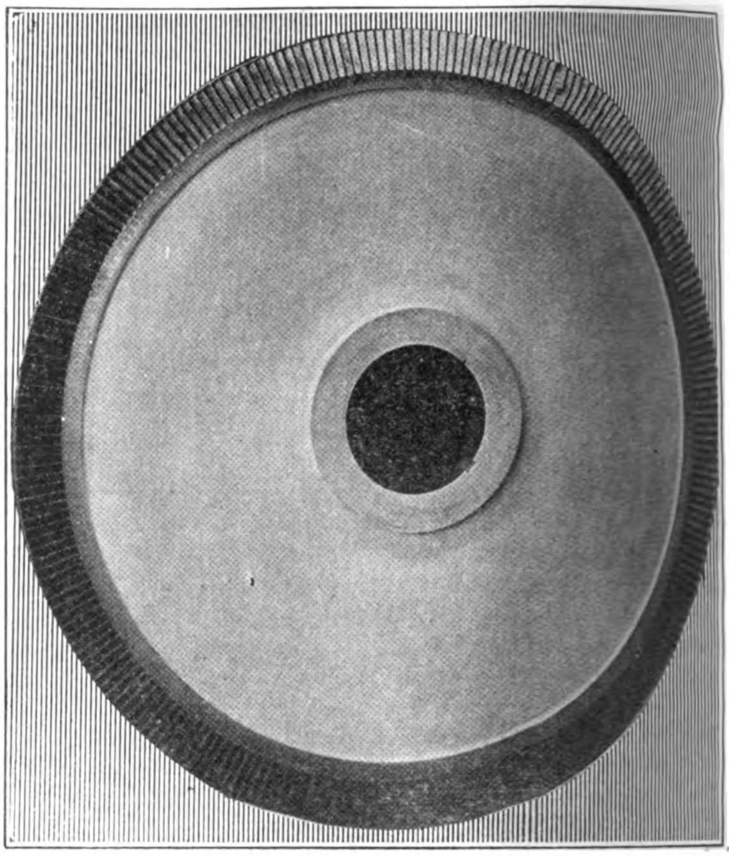


Fig. 11.—Turbine Wheel

and expansion can take place freely without setting up any strain in either.

The steam from the boilers is led through a separator and then enters the steam chest which contains a stop and emergency valve combination leading to a number of throttle valves each of which governs a certain number of nozzles corresponding to the load on the turbine. The total cubic capacity of the outlet as compared to the opening of the valves allows a certain expansion of the steam in the first stage, the kinetic energy thus obtained being used in a velocity wheel. The following stages each consist of a moving wheel with a single row of blades (Fig. 11) separated one from the other by diaphragms (Fig. 12), which contain the nozzles and increase in size stage by stage until the kinetic energy of the steam is exhausted. All the blades are of nickel steel and the rotating discs of Siemens Martin steel. The actual construction of these blades and diaphragms will be explained in the next article.

The turbine is fitted with a forced lubrication system, the power being supplied by a valveless type of rotary pump driven direct from the main shaft through worm gearing. The oil is cooled by passing through a cooler of the surface condenser type. As an extra precaution the main bearings are provided with water jackets, but in practice these were not found necessary, the oil cooler keeping the lubrication correct even in the hottest weather.

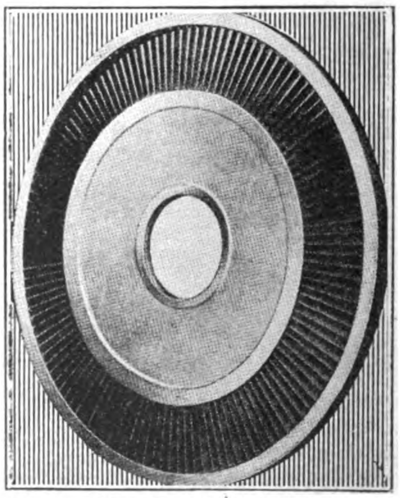


Fig. 12.—Diaphragm

The speed of the set is controlled by a governor of the centrifugal spring type arranged horizontally under the main turbine shaft and driven from same by worm gearing. The governor is provided with hand operating speeder gear and also with electric speed control worked from the switchboard, allowing a variation of plus or

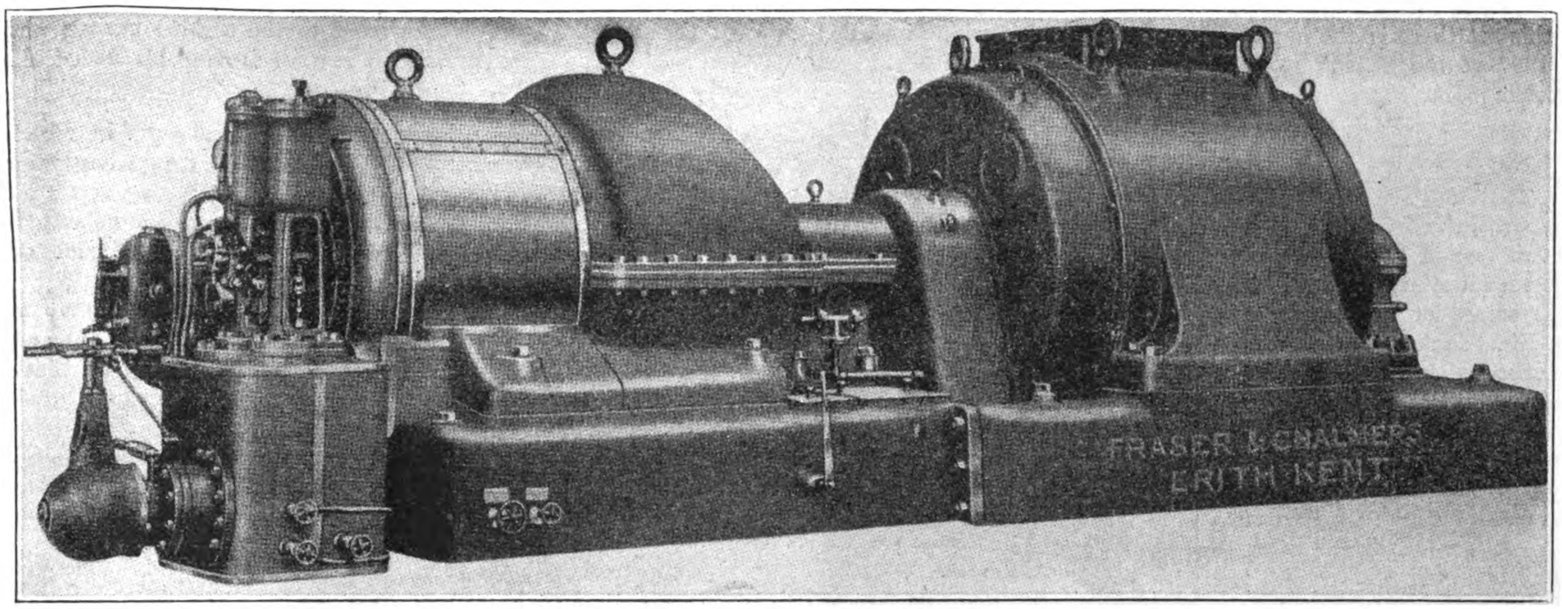


Fig. 13.—Type of Fraser & Chalmers Turbo-Alternators, supplied to the Han Yeh Ping Iron & Coal Company. Capacity, 1,500 K.W., 1,875 K.V.A., 3,000 r.p.m.

mines 5 per cent. on the governor setting. The plant has now been in operation over two years giving satisfaction to all concerned.

The steam consumption of 13-lbs. per k.w. hour was guaranteed within a margin of 5 per cent. tolerance and the official test proved the actual figures to be within the prescribed limits.

In addition to the above 5,000 kilowatt turbo-generating set supplied to the Shanghai Municipal Electric Plant by Fraser & Chalmers through their agents, the General Electric Company of China, Ltd, a 10,000 kilowatt turbo-alternating set was installed at the same works in April 1920, by the British Electrical and Engineering Company of China. This machine was built by Messrs C. A. Parsons of Newcastle-on-Tyne, and guaranteed to generate with s steam consumption of lesz than 12-lb. per kilowatt hour better than any other machine of the same size and 2½ pounds better than the average consumption of the station. In addition

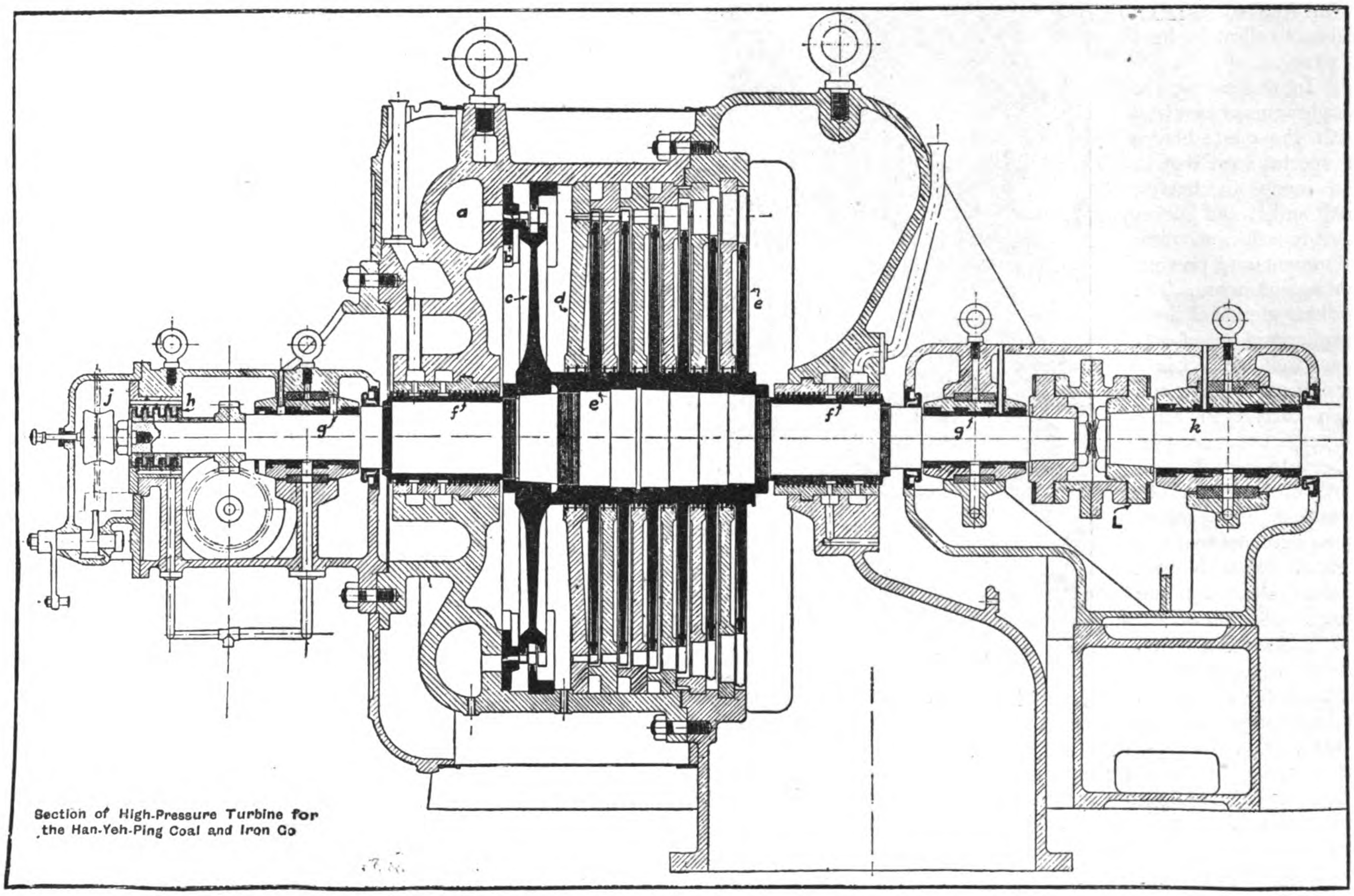


Fig. 14.—Section of High Pressure Turbine for the Han Yeh Ping Coal & Iron Company

to this set there is another 800 kilowatt Parsons turbine installed in 1907 at the Fearon Road station of the Shanghai Municipal Electric plant.

Han Yeh Ping

The Han Yeh Ping Iron & Coal Co., concluded in 1915 a contract with the Fraser & Chalmers Engineering Works for the supply of two sets of turbo-alternators with condensing plant. (Fig. 13). The output of each unit is 1,500 K.W. at 3,000 R.P.M. when supplied with steam at a pressure of 150-lbs. square inch, and superheated 100°F. The surface condensers have a cooling area of 3,600 square feet and are capable of condensing 17,000-lbs. of steam per hour and maintaining a vacuum of 27½ inches when supplied with sufficient cooling water at a temperature not exceeding 85°F.

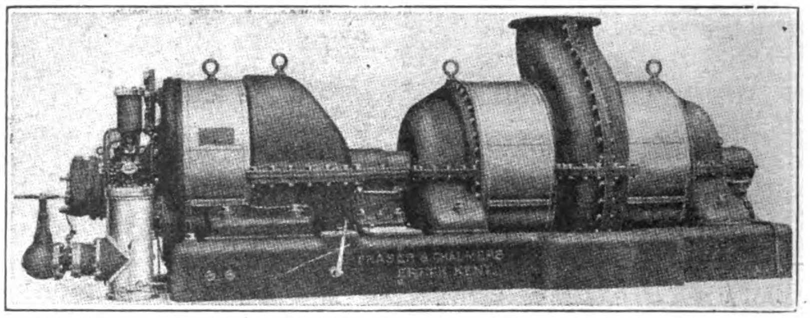


Fig. 15.—Type of Fraser & Chalmers Turbo-Blowers installed for the Blast Furnaces of the Hanyang Iron & Steel Works

The circulating, hotwell and air extraction pumps are all driven by Terry turbines running at 1,500 r.p.m. These auxiliaries exhaust into the main turbine casing so that the somewhat large steam consumption of these small turbines is made a matter of no importance. The turbine casing is cast in four sections and bolted together permanently round the circumferential joint so as to divide the casing into top and bottom halves. The exhaust end is fixed to the bedplate the high-pressure end being free to slide on guides to allow for heat expansion.

In the casing the diaphragms of cast iron with the guide blades of special steel cast in are made in halves, with spigot and socket joint to ensure accurate alignment and prevent leakage of steam. The packing glands of these diaphragms are of soft brass well caulked into machined recesses and then turned to knife edges on the inner periphery to suit the diameter of the rotor shaft. Practically no clearance is required because the critical speed is well above the running speed.

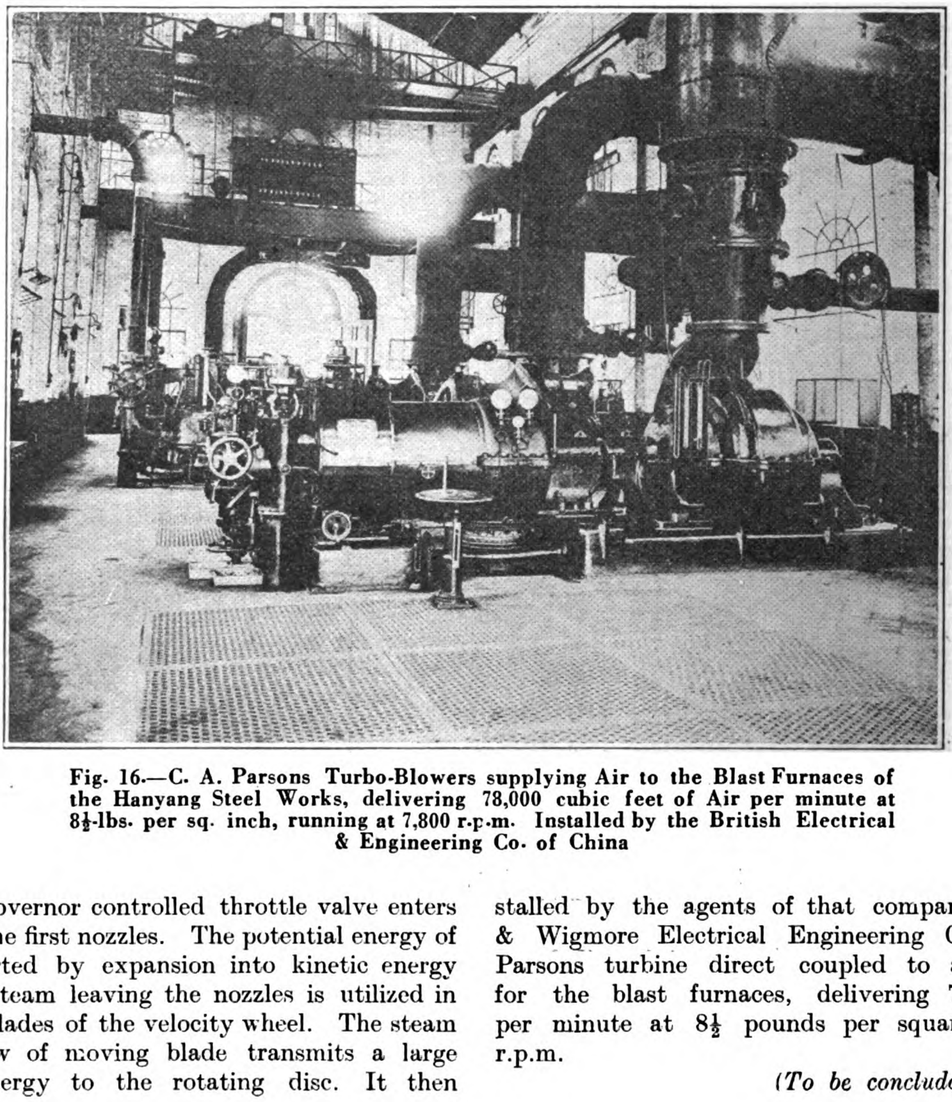


Fig. 16.—C. A. Parsons Turbo-Blowers supplying Air to the Blast Furnaces of the Hanyang Steel Works, delivering 78,000 cubic feet of Air per minute at 8½-lbs. per sq. inch, running at 7,800 r.p.m. Installed by the British Electrical & Engineering Co. of China

The rotor consists of one velocity wheel with two rows of blades and a number of single wheels. (Fig. 14.) The steam after passing the governor controlled throttle valve enters the steam belt leading to the first nozzles. The potential energy of the steam is then converted by expansion into kinetic energy and the velocity of the steam leaving the nozzles is utilized in the two rows of moving blades of the velocity wheel. The steam impinging on the first row of moving blade transmits a large portion of its kinetic energy to the rotating disc. It then passes through the guide blades fixed to the turbine casing and is then projected on to the second row of moving blades of the velocity wheel.

The steam then passes through the first diaphragm in which it expands further, the kinetic energy gained by the expansion being utilized in the next moving wheel, this process being repeated through all the following stages. Packing glands of the labyrinth type holds the steam at the high pressure end and prevents loss of vacuum at the opposite end of the casing.

The alternators have a rating of 1,875 K.V.A. or 1,500 K.W. They are ventilated by means of fans mounted on the rotor, the cleanliness of the cooling medium being ensured by a system of dry air filters.

The switch gear lay out provides for three generator panels, one exciter panel, five feeders and two transformer panels. All the high-pressure apparatus is suitably mounted in concrete cubicles well clear of the operating board. The oil immersed singe pole main switches are in separate tanks and interconnected externally by spindle and bell cranks which can be operated by hand from the panel board.

It is interesting to note that the ore crushing and cleaning plant at the mines, nearly nineteen miles away from the power generating plant, together with the air compressors and other machinery totalling altogether about 1,000 K.W. receive their power transmitted at 22,000 volts by an overhead line. This line is in three sections with pole isolating switches mechanically operated from the ground. Electrolyic lightening arresters are provided at each end for the protections of connected apparatus. Taken altogether the installation provides an object lesson on the way modern methods are being adopted by purely Chinese undertakings.

In addition to the above Fraser & Chalmers installation at the Hanyang Steel Works, there is a Westinghouse 2,000 kilowatt steam turbine generator installed by the agents of that company, the Gaston, Williams & Wigmore Electrical Engineering Corporation, and a C. A. Parsons turbine direct coupled to a C. A. Parsons blower for the blast furnaces, delivering 78,000 cubic feet of air per minute at 8½ pounds per square inch, running at 7,800 r.p.m.

(To be concluded).

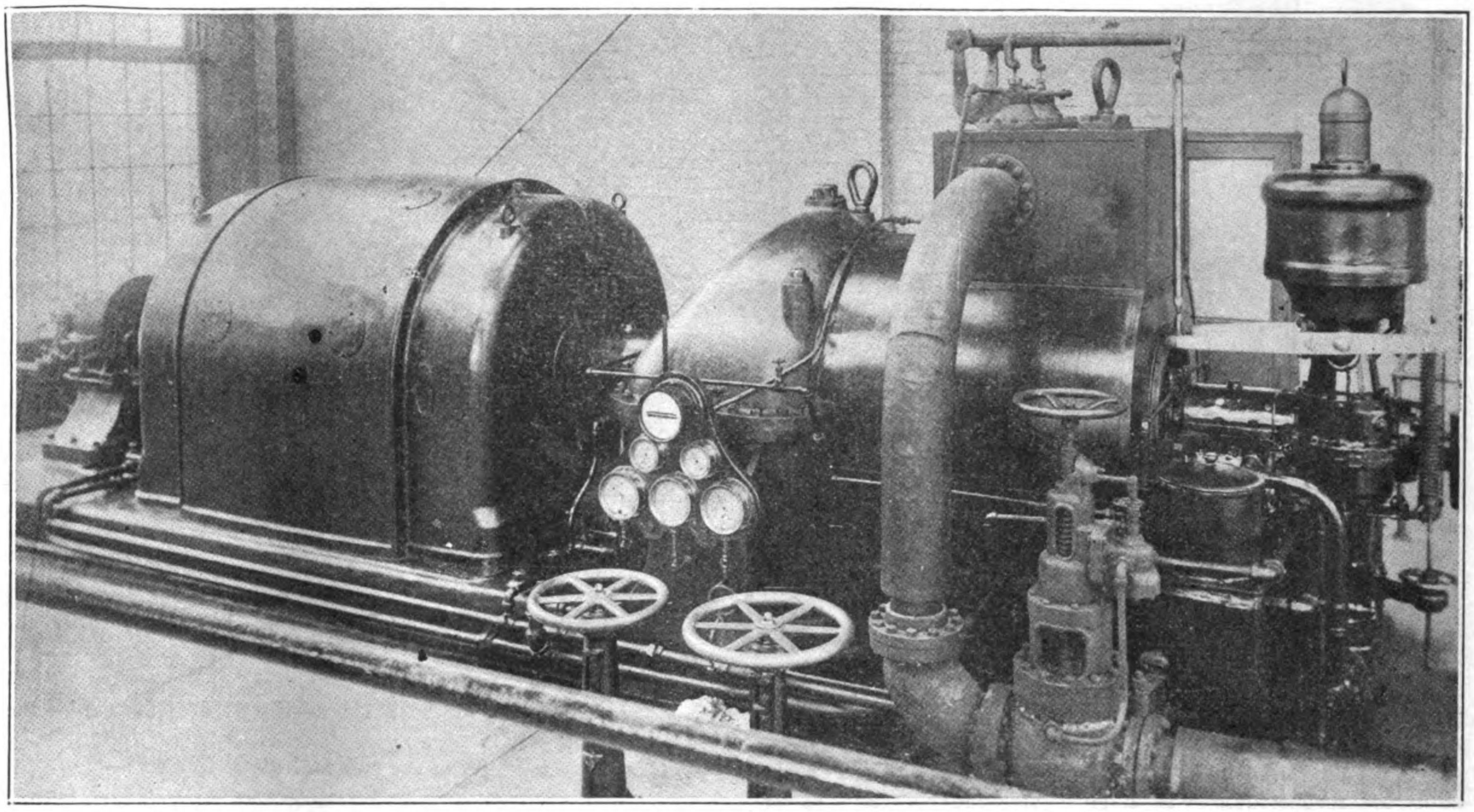


Fig. 17.—A Westinghouse 2,000 Kilowatt Turbo-Generator Unit installed at the Han Yeh Ping Steel Works, by the Gaston, Williams & Wigmore Electrical Engineering Corporation

In these, as in the preceding photographs which illustrate Mr. Smith's article, it will be seen that rapid strides are being made in China in an electrical way, and if in an electrical way then in other ways for power were needless if industrial development were absent. A number of large electrical instruments are installed at the Han-yeh-ping Steel Works besides those shown, and it is not necessary to make mention of the unflagging activities of this concern except to say that it has established a high water mark in China engineering which demands an equal diligence and regard for modern standards if those who follow are to make similar headway. From all over the country come reports of electrical enterprise, small, it is true, in a large number of cases, but the start has been made, and with the present time tendency on the part of the Chinese to progress in the Western way there must come such electrical activity as has long been expected by those who are interested in the business, and by those who believe that China will sooner or later dispense with her inherited inclination towards atavism.—*Ed.*

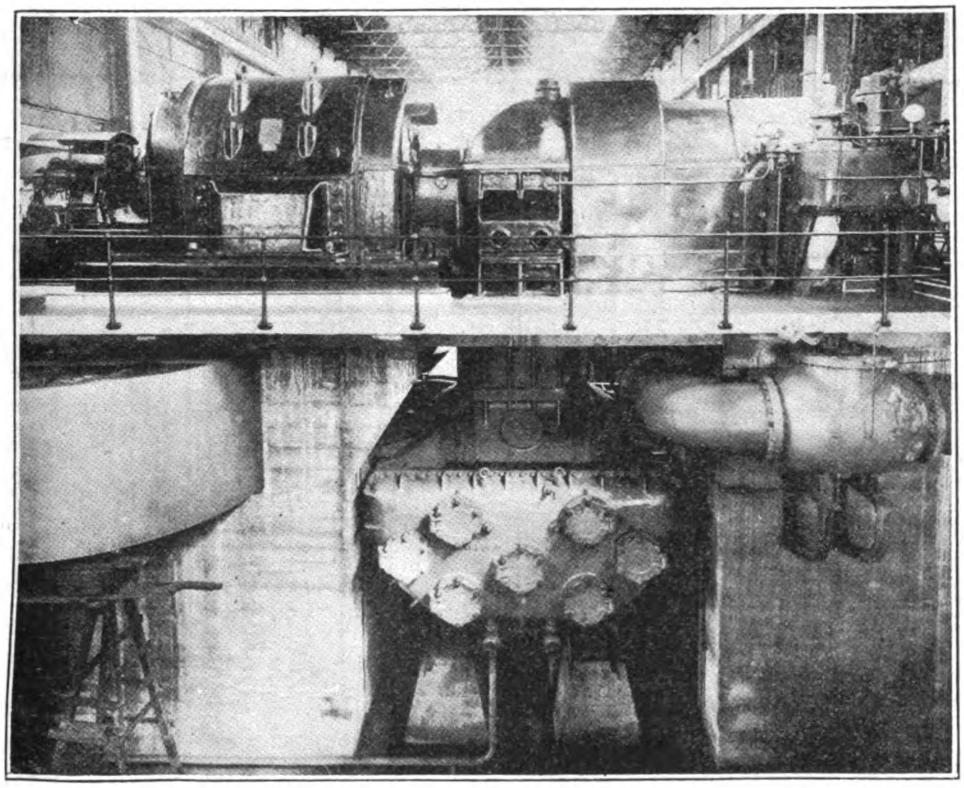
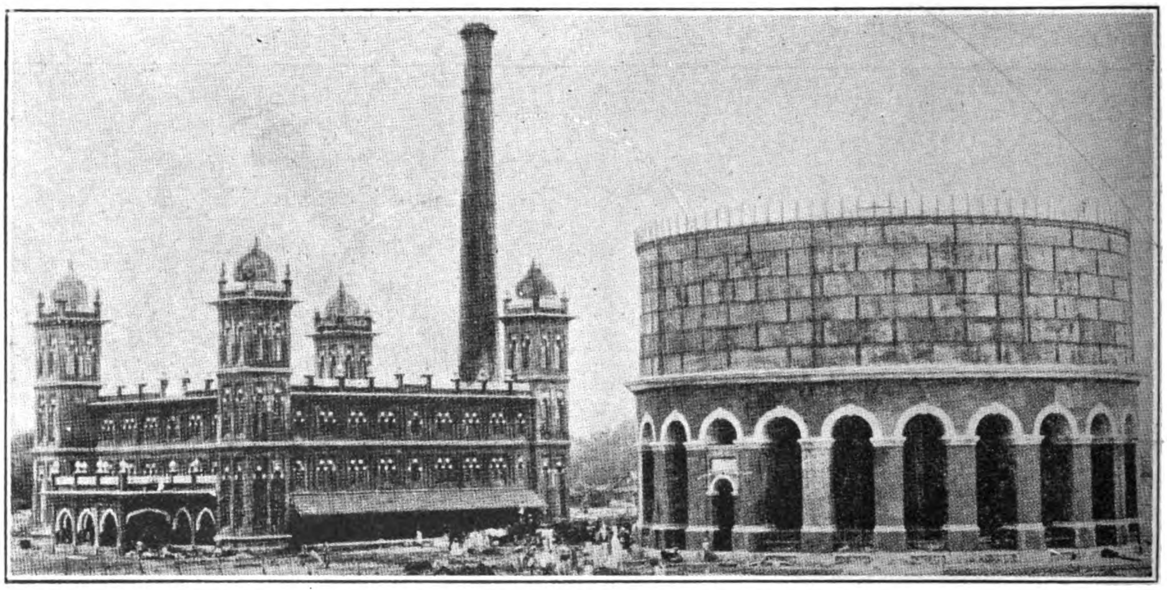


Fig. 18.—A 10,000 Kilowatt C. A. Parsons Turbo-Alternator, 50 periods, 3-phase, installed by the British Electrical & Engineering Company of China at the Shanghai Municipal Electricity Works



Pumping Station and Elevated Tank

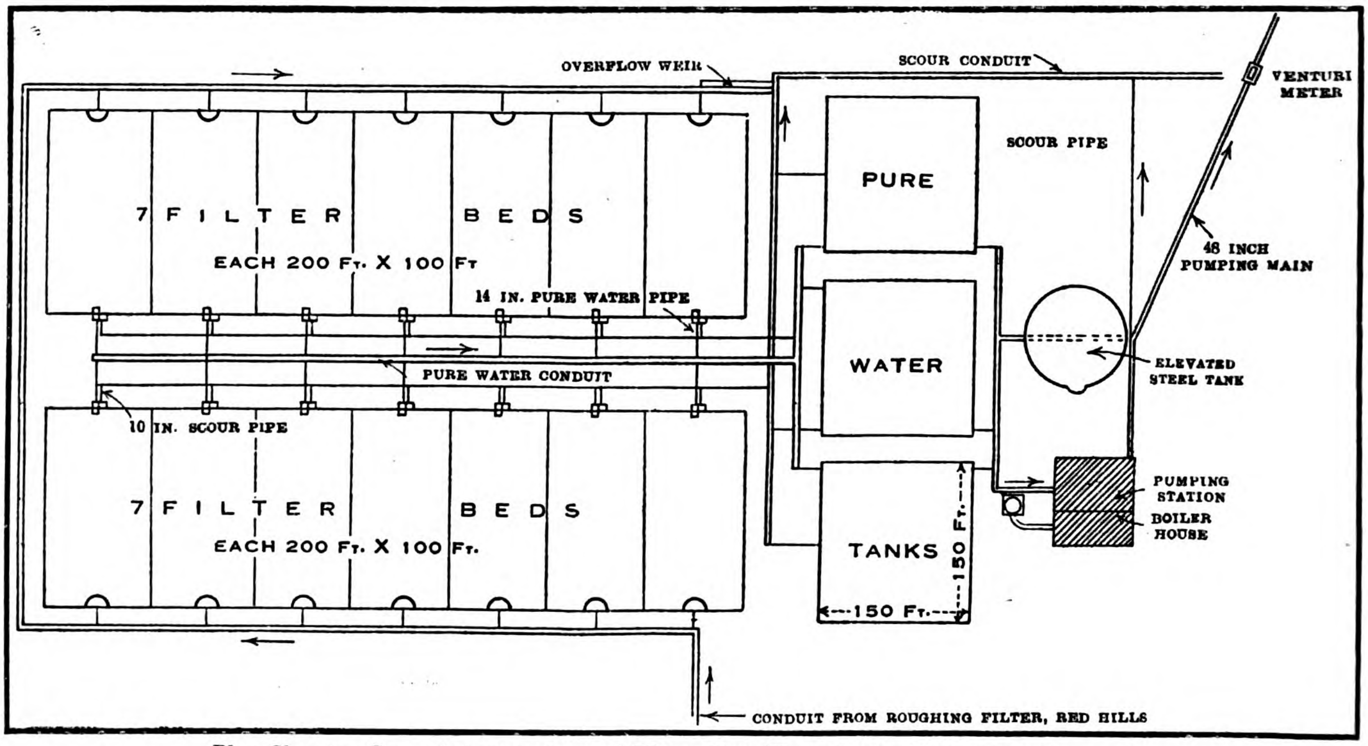
The Madras City Waterworks

THE official description of the Madras Corporation Waterworks prepared by Mr. J. W. Madeley, M.I.C.E., etc., the special engineer who supervised their reconstruction is a most valuable contribution to Asiatic engineering literature. Mr. Madeley says that the Madras city water-supply is part of a project undertaken with the object of utilising, to the fullest economical extent, the waters of the Corteliar river and its tributaries. This is effected by means of a masonry weir build across the Corteliar river at Tamarapakkam. This weir diverts the river—excluding the greater flood discharges—into a channel feeding the Cholavaram and Red Hills Tanks which store the flood water, resulting from the monsoon rains, and render it available during the months that the river bed is dry. From the lower of these—the Red Hills Tank—the Madras water-supply is drawn.

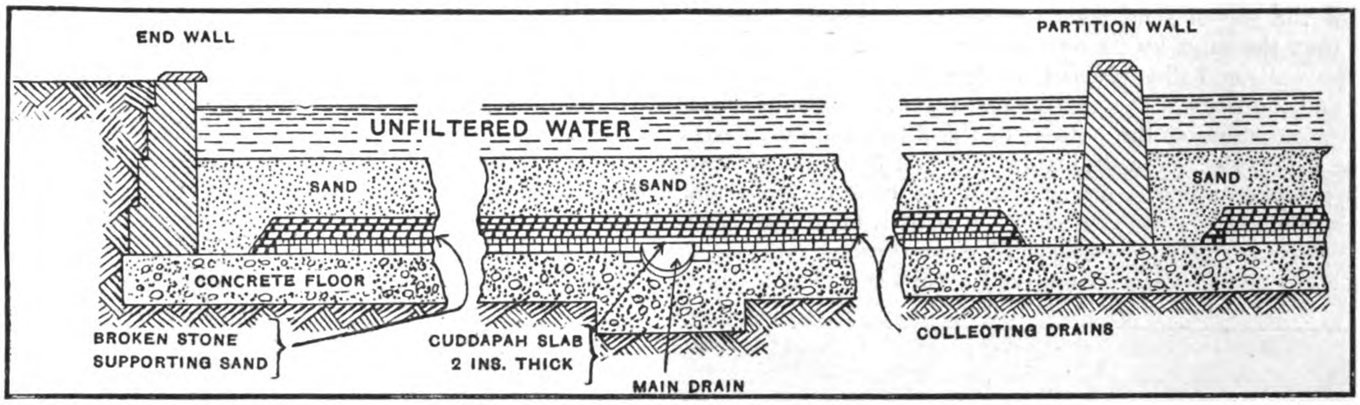
The storage capacity of the two tanks is as follows :—

	Cub. feet.
Red Hills Tank at its present Full Tank Level (44.36 G. T. S.) is	2,162,000,000
Cholavaram Tank at its present Full Tank Level (59.73 G. T. S.) is	579,000,000
Total ...	2,741,000,000

The average rainfall over the whole catchment area may be taken as 37 inches per annum.



Plan Showing General Arrangement of Filters, Pure Water Tanks, Pumping Station and Elevated Tank at Kilpauk. Scale 1-in.=200-ft.

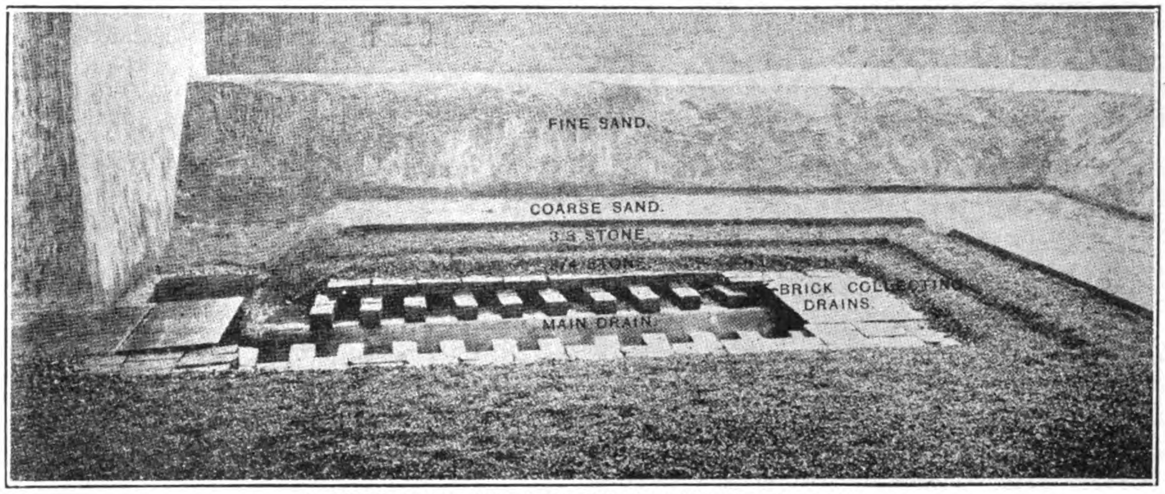


Section of Filter Showing Arrangement of Filtering Materials. Scale 1-in=8-ft.

In order to remedy many defects in the old system, the following new works were successfully carried to completion six years ago, and formed the subject of a special paper read before the Institution of Water Engineers in December 1919.

(*a*) An *intake tower* in Red Hills Lake located at a point where the water is deep, so that the lake can be almost entirely emptied without pumping; (*b*) a *underground conduit* to replace the existing open channel prevent loss by evaporation and percolation, convey an adequate supply of water, and remove the possibility of pollution in transit; (*c*) sand filters to purify the water; (*d*) *pure water tanks* to store the filtered water; (*c*) *pumps* to impart to the water an adequate pressure; (*f*) an *elevated tank* to ensure the maintenance of a steady pressure in the mains; (*g*) the *remodelling, alteration and extension of the distribution system* so as to provide all the inhabitants of Madras with an adequate quantity of water under sufficient pressure.

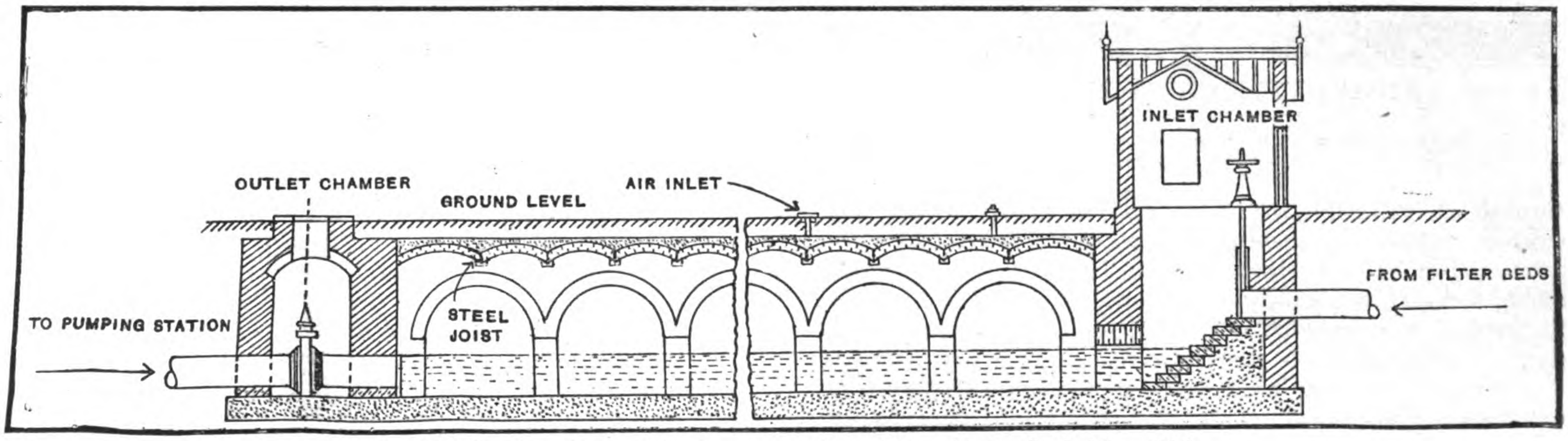
Limitations of space confine us to a description of the more important engineering features of the work as embraced in the construction of the filter beds and pumping plant equipment.



FILTER BED SHOWING FILTERING MATERIALS.

The fine sand, 28 inches thick, is seen to be supported on 2 inches of coarse sand, which rests on a 2-inch layer of $\frac{3}{8}$-inch stone, under which is 2 inches of $\frac{3}{4}$-inch stone. Below the stone are the brick collecting drains leading to the main drain, which is sunk below the filter floor. The raw water is admitted at the top, is purified by passing through the sand, and leaves the filter by means of the main drain.

FILTERS.—Fourteen filters of the ordinary slow sand type are arranged in two rows of seven each, it being intended that six filters of each row—twelve in all—should be continuously in operation, allowance being made for one filter in each seven being under repair or being cleaned. Provision has also been made for seven additional filters, which will be constructed when required. The conduit, which brings the water from the Red Hills, is continued round the fourteen filters, and is connected to each bed by a 14-inch diameter cast-iron pipe controlled by a valve, so that any filter may be isolated for cleaning or repair. Between the two rows of filters runs the *filtered water channel*, to which filtered water from each bed can be delivered through a Glenfield-Jones automatic outlet, designed to keep the rate of filtration constant. Each filter is 200 feet long and 100 feet wide, this being a convenient size for cleaning, without throwing out of use too large a filter area at a time.

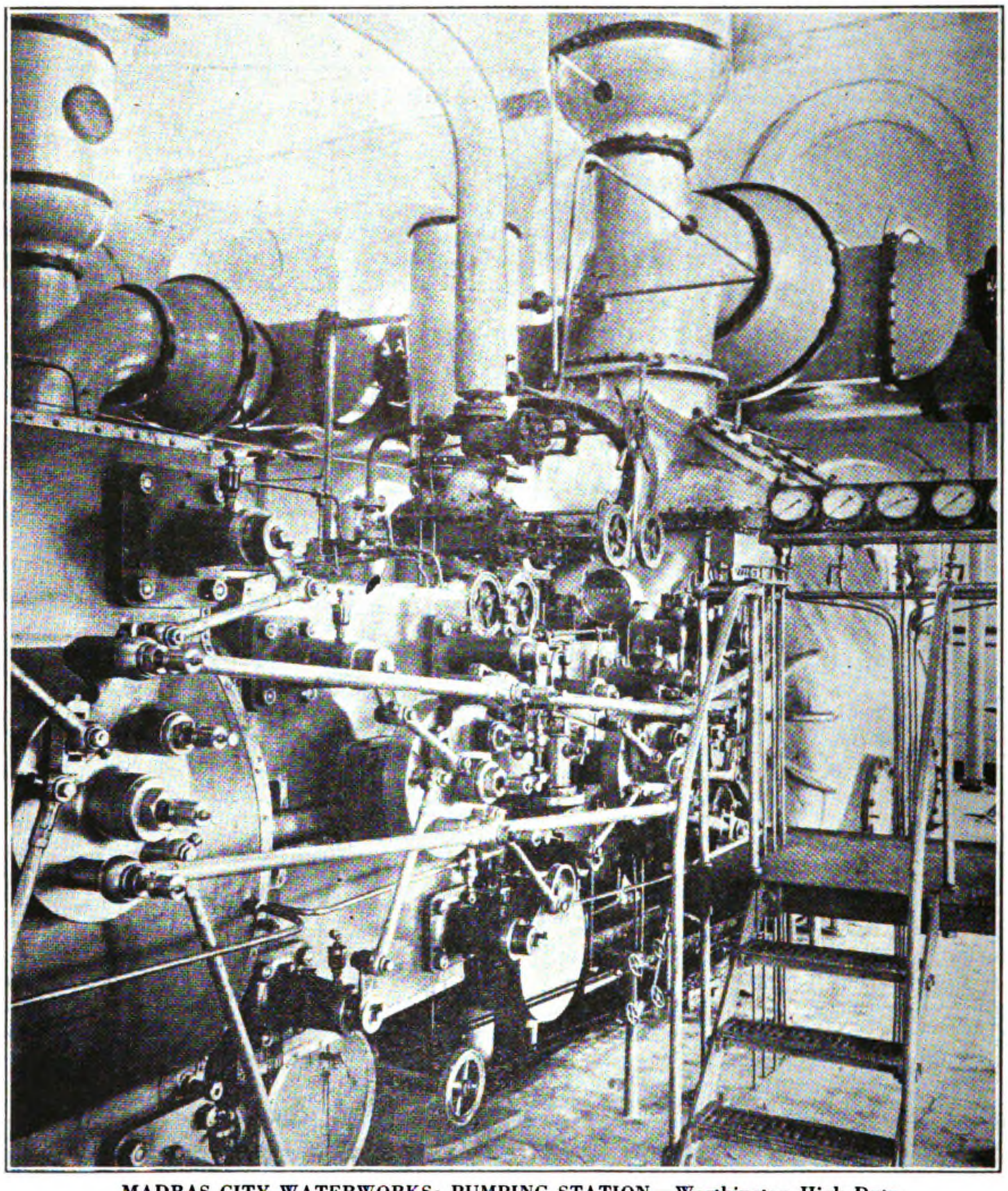


Typical Section Through Underground Pure Water Tank. Scale 1-in.=16-ft.

Below the top of sand level the walls are slightly battered, in order that the sand by its own weight may be packed tightly against the walls and thus prevent the free flow of water between the sand and the walls. As a further precaution neither the drains nor the broken stone at the bottom of the filters are taken right up to the side walls. The drains are stopped 3 feet away from the walls; broken stone is placed round the ends of the drains and the space between the stone and the walls is filled with sand.

The *filtering material* consists of clean washed river sand, screened so as to eliminate all material except that which passes through $\frac{1}{30}$ inch mesh and is retained on $\frac{1}{50}$ inch mesh. Under the fine sand layer, 28 inches deep, is a layer of coarse sand 2 inches deep resting on broken granite stone laid in two layers, each 2 inches deep. The top layer of stone will pass a $\frac{3}{8}$ inch ring and be retained on a $\frac{1}{8}$ inch ring; the bottom layer will pass a $\frac{3}{4}$ inch ring and be retained on a $\frac{3}{8}$ inch ring.

Below the bottom layer of stone are brick collecting drains, consisting of rows of best pressed bricks laid flat, $4\frac{1}{2}$ inches apart, and covered by another layer of bricks with open joints. Through these drains, the water makes its way to the main semi-circular drain running along the centre of the bed and sunk below the floor. This drain is 24 inches wide, and is covered by Cuddapah slabs. It leads to a rectangular filter outlet chamber which contains a Glenfield-Jones *automatic outlet regulator*, the object of which is to ensure that the rate of filtration shall be maintained constant.



MADRAS CITY WATERWORKS: PUMPING STATION.—Worthington High Duty Direct Acting Pumping Engine.

Three engines and pumps, similar to this, have been installed, each pump is capable of delivering 12,000 gallons of water per minute against a total head of 80 feet.

PURE WATER TANKS.—The filtered water flows into three underground covered pure water storage tanks, each 150 feet square with a depth of 10 feet of water, having a capacity of 1,400,000 gallons each. The tank floor consists of 2 feet of concrete, and the side walls are of brickwork. The roof is supported on brick jack arches, springing from steel girders resting on brick cross walls carried by arches springing from granite stone piers. Access to each tank is provided by means of manholes, and vent pipes are provided to allow the free ingress and egress of air which is very necessary, seeing that the water level is constantly varying.

Each tank is provided with a 30-inch inlet and 30-inch outlet, both fitted with sluice valves so that any tank may readily be isolated for cleaning or repairs without interfering with the working of the other tanks. A scour is also provided for emptying and cleaning each tank.

PUMPING STATION.—From the pure water tanks, the water gravitates to the suction culvert whence it will be pumped into the corporation mains through a 48-inch diameter steel main half a mile long. An elevated tank is connected with the pumping main, in order to act as a balancing tank between the pumps and the distribution system.

In designing the pumping station buildings, an endeavor has been made to give them a pleasing appearance and much attention has been paid to a suitable style of architecture. There is no doubt that environment is important. It is believed that a real economy will be obtained by providing a pumping station that is suitably designed. If it is in keeping with the machinery it has to house, if it is well ventilated, well lighted, clean, cool and inspiring both inside and out, then it is likely that the drivers will take a pride in looking after the machinery and in maintaining it clean, polished, and well oiled, perfectly adjusted, and in the best possible condition. The working costs will thus be reduced and the life of the plant will be increased.

The towers at the four corners are intended to give distinction to the building, and to prevent it being dwarfed by the elevated tank. The suction culvert has, for the sake of economy, been kept small, but is of sufficient sectional area to allow the free passage of water to the furthest pump whatever the level in the clear water tank may be.

The chimney has been made 150 feet high to ensure a good draught with Indian coal. Experience with other plants in Madras

has proved that higher chimneys are required in that city than in other places where the atmosphere is less humid and where a better quality coal is obtainable.

PUMPING MACHINERY.—The pumping plant has been supplied and erected by Messrs. James Simpson & Co., of England and Calcutta. It comprises three high duty Worthington direct-acting pumping engines each capable of delivering 12,000 gallons of water per minute against a maximum total head of 80 feet. Three Babcock and Wilcox boilers are provided each capable of supplying steam continuously to any two engines working together against a total head of 80 feet.

The machinery is so arranged that any two engines can be worked from any two boilers, and that any group of engines and boilers may be worked together, and also that any engine or boiler may be cleaned or repaired without interfering with the working of the other engines and boilers.

The guaranteed consumption is 1.75-lbs. of Bengal coal per pump horse-power-hour which is an extremely low figure. The boilers are provided with automatic chain grate stokers having an area of 36 square feet each.

A Venturi meter has been inserted on the 48-inch pumping main, arranged for a maximum registration of 1,800,000 and a minimum registration of 120,000 gallons per hour. A combined recorder will be used to show by diagram the rate of flow at any moment, and by counter the total quantity passed. A water level and pump pressure recorder have also been provided, so that complete records are available for calculating the work done by the plant.

ELEVATED TANK.—The elevated tank is required to maintain a balance between the demand and supply of water to the distributary system. The demand is constantly changing throughout the day, and also changes from one day to another. To meet this fluctuation, a tank is required at such a height as will ensure an adequate pressure all over the city and of a capacity sufficiently large to meet small fluctuations in demand.

When the quantity of water pumped is greater than the consumption, the tank will store the excess, and will supply it to the city when the consumption is in excess of the quantity pumped.

The tank is constructed of steel. It is circular in plan, 104 feet in diameter, 28 feet deep from overflow level to the flat bottom and has a capacity of 1½ million gallons. In order to maintain an adequate pressure all over the city, the tank has been designed with its bottom 37 feet and the top of roof 73 feet above ground level.

The tank is supported by an external ring of brick piers and arches while steel stanchions surrounded with brickwork are used for the central supports in order to minimise the weight which, if only brick supports were used, would be greater than the safe limiting pressure on the ground on which the foundations rest.

LOAD ON TANK FOUNDATIONS.—The whole area occupied by the elevated tank, pumping station, filters, etc., is covered by a layer of black clay which would not form a satisfactory shallow foundation, as it is liable to contract and crack during dry weather, and to swell during the wet season. In various parts of Madras the expansion and contraction of a similar clay have caused serious cracks in numerous houses. At a depth of eight feet, however, there is a sandy loam on which the tank may be safely founded. The load on the foundations has been restricted to 1½ tons per square foot.

Experience has proved this to be a safe limit, and an experiment made by loading two stones, each 4 square feet in area, with 2½ tons per squre foot has confirmed the teaching of experience.

WEIGHTS OF MATERIALS IN TANKS AND LOADS.—The following, figures, showing the weights of materials and the loads for the elevated tank, may be of interest:—

Total weight of materials and water :—

Steel-work...	598 tons.
Masonry	9,723 ,,
Water	6,550 ,,
Total	16,871 ,,

Load on foundations :—

Total on foundations	16,870 tons.
Area of concrete base	11,500 sq. ft.
Pressure per square foot on ground ...	1.46 tons.
Area of Piers	866.7 sq. ft.
Pressure per square foot at base of piers	4.54 tons.

Sino-German Pact

THE Sino-German trade agreement was signed in Peking on May 20. It includes a declaration by Germany expressing her consent to the abrogation of German consular jurisdiction in China, and her regret at her inability to restore China's rights in Shantung. Germany also undertakes to fulfil the obligations arising for her out of the China section of the Versailles Treaty, to restore the German glacis in Peking to China, and to reimburse China for the expense of interning Germans in China.

The Various Articles

The agreement contains seven articles. The first and second deal with the mutual appointment of diplomatic and consular representatives. The third provides for mutual travelling, residential and trading rights; the jurisdiction of the local courts over the life and property of Germans in China and Chinese in Germany, and that the taxation imposed on Chinese in Germany and Germans in China shall not be higher than that payable by Chinese in China and Germans in Germany. The fourth article provides for mutual tariff autonomy, subject to a proviso that the nationals of one country shall not pay import, export and transit taxes higher than those paid by the nationals of the other.

The fifth article provides that this declaration and agreement shall form the basis of a definitive treaty.

The agreement is written in Chinese, German and French, and Article Six declares that the French text shall be the authentic one in the event of a controversy.

Article Seven fixes the date on which the treaty is to become operative as the day on which the two governments shall have given notice of their ratification of the agreement.

Exchange of Notes

An exchange of notes is attached to the agreement, interpreting certain of its articles

The German Note says :—

(1) In connection with Article Four of the agreement China is entitled to apply Article 264 of the Versailles Treaty.

(2) That the reimbursement of the expenses of interning Germans in China is additional to the war indemnity due China, of which Germany is willing to pay (1) a portion in a lump sum equivalent to half the proceeds of the liquidated German property in China, plus half the value of the German property in China which has been sequestrated but not liquidated, the latter amount being four million dollars ; and (2) the remainder in Tientsin-Pukow and Hukwang Railway bonds.

(3) Chinese property in Germany to be returned after ratification of the agreement.

(4) Germany to assist Chinese students in Germany.

German Queries Answered

The Chinese foreign minister, replying to German queries, says :—

(1) The Chinese government promises full protection to German residents in China, and undertakes that there will be no further sequestration of German property provided that China receives similar treatment from Germany.

(2) Law-suits wherein Germans are concerned shall be tried in modern courts under modern legal codes, and the assistance of German lawyers shall be permitted.

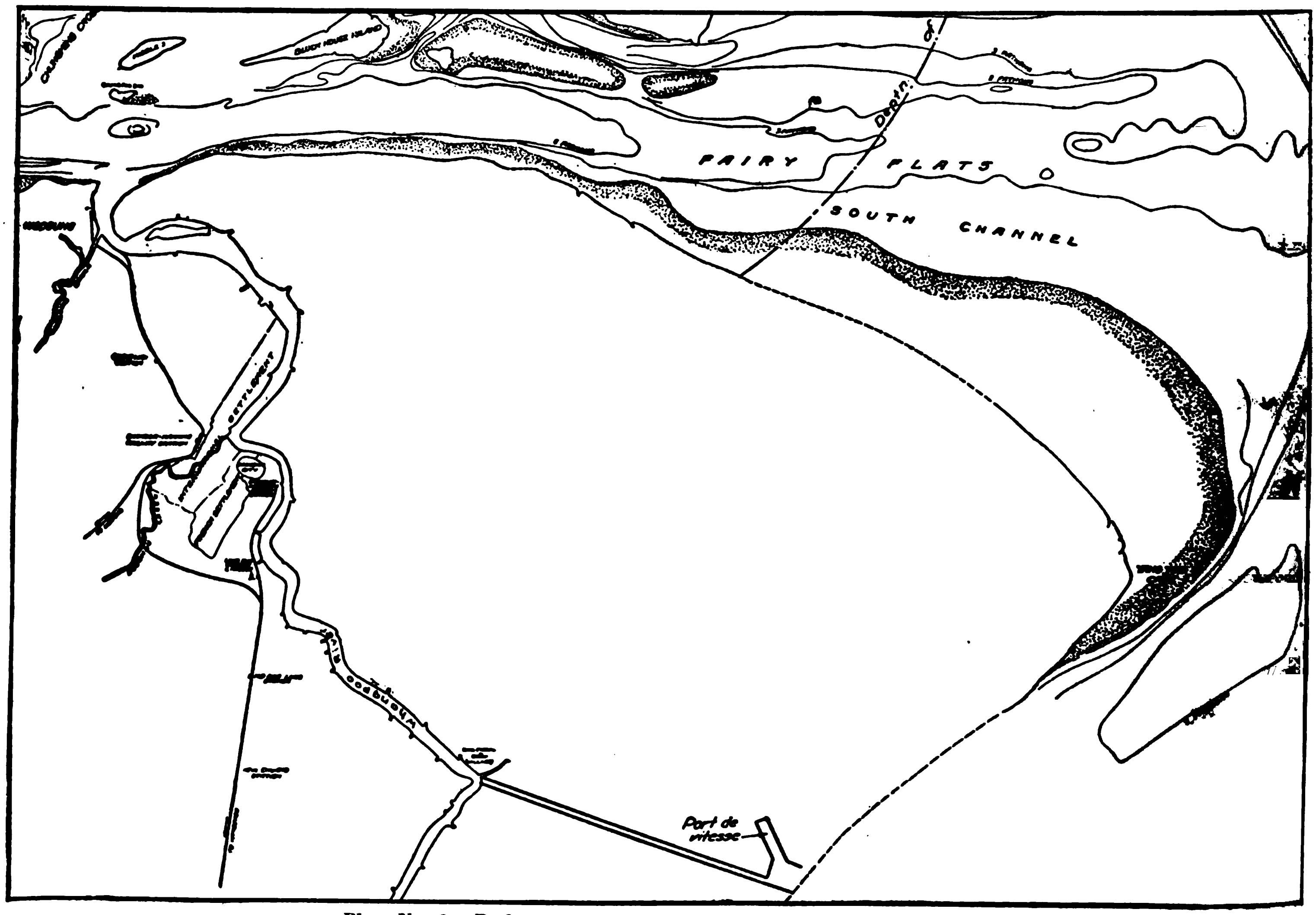
An Express Port for Shanghai

FOR some years the question of adequately providing for the future development of the port of Shanghai has received serious study from the engineers of the Whangpoo conservancy board. Notwithstanding the remarkable progress made since the commencement of operations in training the local river and deepening its channel, it has each year become more and more evident that some larger scheme would have to be drawn up and put into execution, if Shanghai is to preserve its position as the premier port of central China. The future problem of the harbor has therefore been ever before the conservancy board and various schemes have been studied and proposed as a solution.

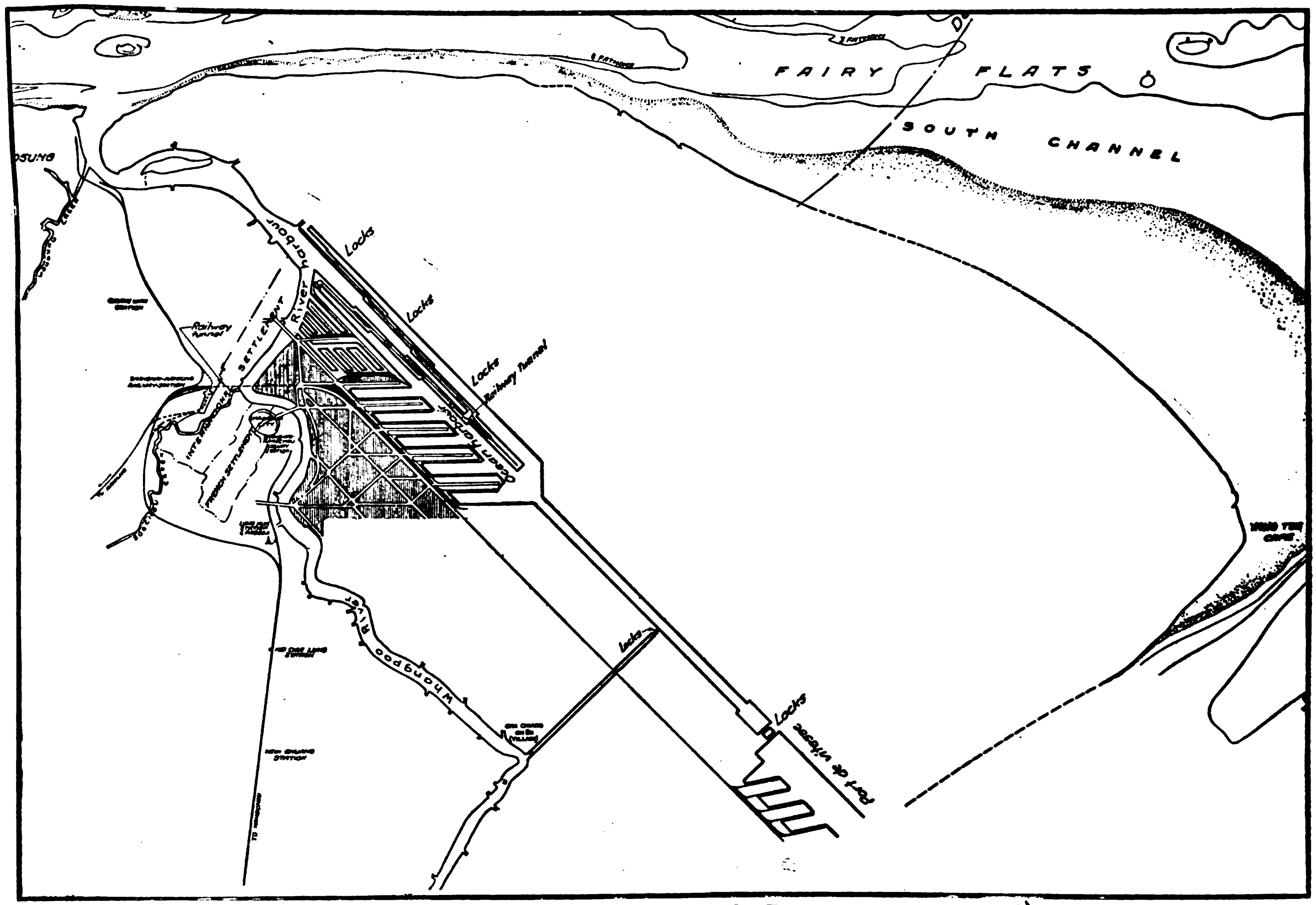
Shanghai harbor is a typical river harbor and apart from the powerful tidal currents, the Whangpoo may be regarded as a ship canal of the first order with a navigable depth of almost 26 feet. Even with the completion of this 26-foot channel from Shanghai to the Yangtze at Woosung, the problem of a deep water approach to the city is far from being solved, as the outermost part of the Yangtze Estuary is blocked by an enormous bar—called the Fairy Flats—where only 16 feet are available at lowest low water, 26 feet at neap high water and 28 to 30 feet at spring high water. The dredging of the 32-mile channel over the Fairy Flats being out of the question, the problem of conserving for Shanghai its dominant place as the centre of Chinese trade and shipping is one that concerns every firm and property owner in the Settlement.

The question of the further development of the harbor, whether and how the Fairy Flat bar can be deepened, and whether the development of the harbor lies in the future development of the present river harbor at Woosung, or a new deep water harbor at Woosung or on the south side of the Pootung Peninsula on Hangchow Bay (40 miles south of Shanghai) was raised in a special report made to the conservancy board in 1918 by three engineers—Prof. Dr. J. G. Richert, Mr. P. G. Hornell and Mr. H. von Heidenstam. It has been shown that a few miles west of Yangtze Cape at a distance of a couple of miles from the coast line, the depth at low water was 35 feet, which indicated that a port on Hangchow Bay could be constructed at much less cost than dredging a deep water channel 32 miles through the shifting Fairy Flats. The channel to be dredged for a Hangchow Bay port would be eleven times shorter and free from the danger of rapidly silting up. Such a port would involve a great saving of distance for the big ocean steamships by avoiding the troublesome Yangtze estuary. Within the last ten years there has been an increase of 100 per cent. in the size of steamers visiting Shanghai and the tendency is to increase the size. The difficulty of these vessels reaching the anchorage off Woosung is such that unless some measure is adopted to facilitate their entrance, Shanghai trade will have to be limited to the smaller size steamships.

In carrying out their investigations, the committee of engineers above mentioned submitted to the conservancy board four scheme, indicating how the problem might be met and solved. The firsts shown on Plan 1, implies the construction of an inlet that will



Plan No. 1.—Preliminary Plan for the Extension of Shanghai Harbor



Plan No. 2.—Showing an alternate Project for the Extension of Shanghai Harbor

reduce the distance between the sea and the Whangpoo to a minimum. It was furthermore presumed that the harbor should be located as near the coast as possible, in free communication with the sea as well as the Whangpoo. In the second plan, the inlet from the sea is constructed near the Yangtze Cape where it would not be silted up from the estuary. The canal is here drawn in such a direction with regard to the Whangpoo that the communication will be as easy as possible at the junction with the mouth of the Whangpoo. The harbor here shown is designed as a combined open harbor and dock harbor, in which the ships may call without being held up by any tedious passing through locks. In this case such transhipping arrangements might be conceived that between the open river harbor and the dock harbor—the latter being constructed for the largest vessels plying the Pacific—narrow tongues of land are left across which the goods may be transhipped between sea-going vessels and river boats. The project is merely an attempt to picture one of the innumerable solutions that had to be considered.

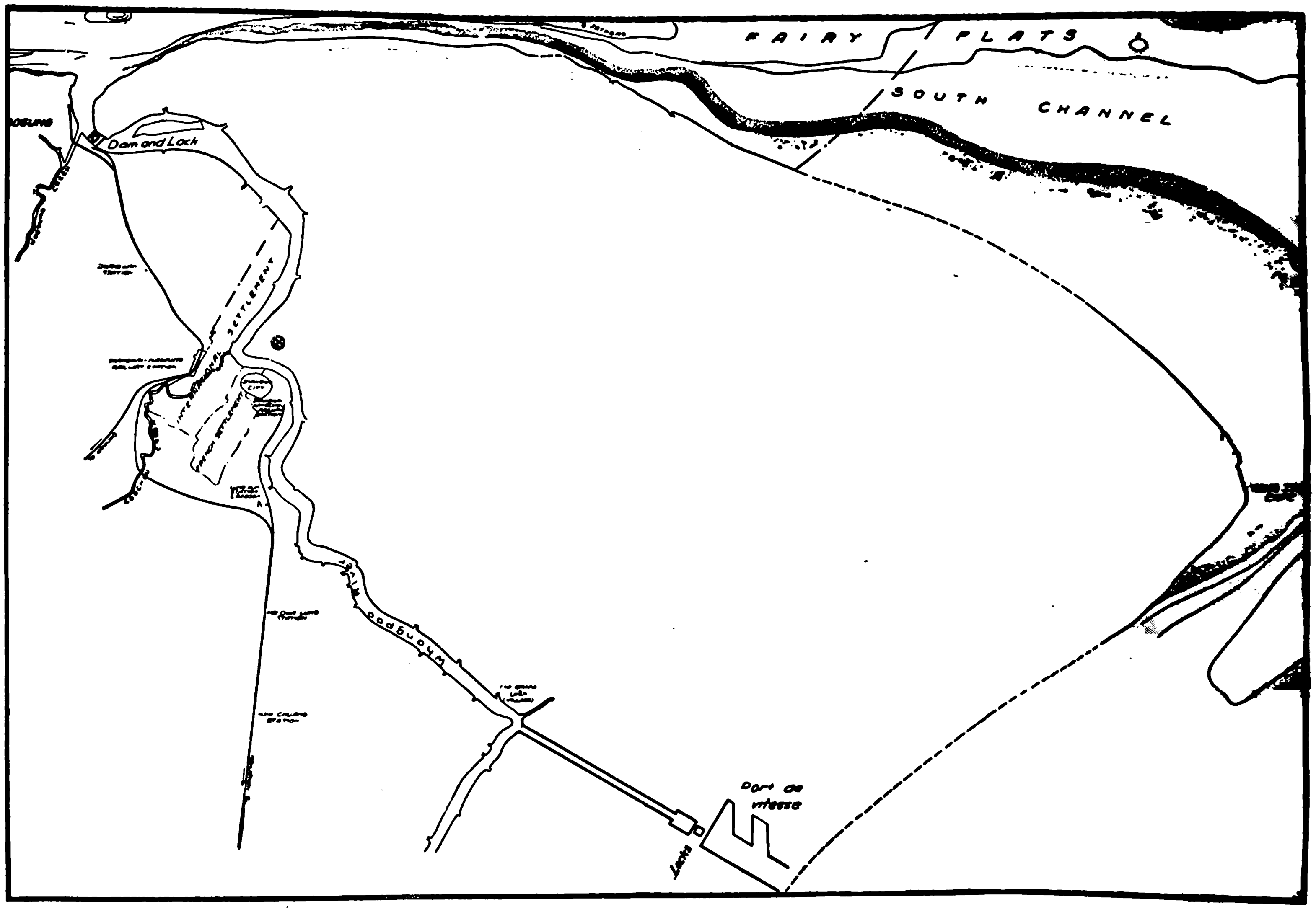
The main object of the harbor is and must be to meet, in the best possible way, the demand of traffic for the Yangtze district as a whole—not only for Shanghai and the Whangpoo district. The due fulfilment of this object not only requires that the entrance to the Yangtze shall be sufficient for the biggest vessels that can ply between the estuary and Hankow, but also that the through traffic is troubled in the least possible degree by the local traffic in the Shanghai harbor and in other parts of the lower Whangpoo.

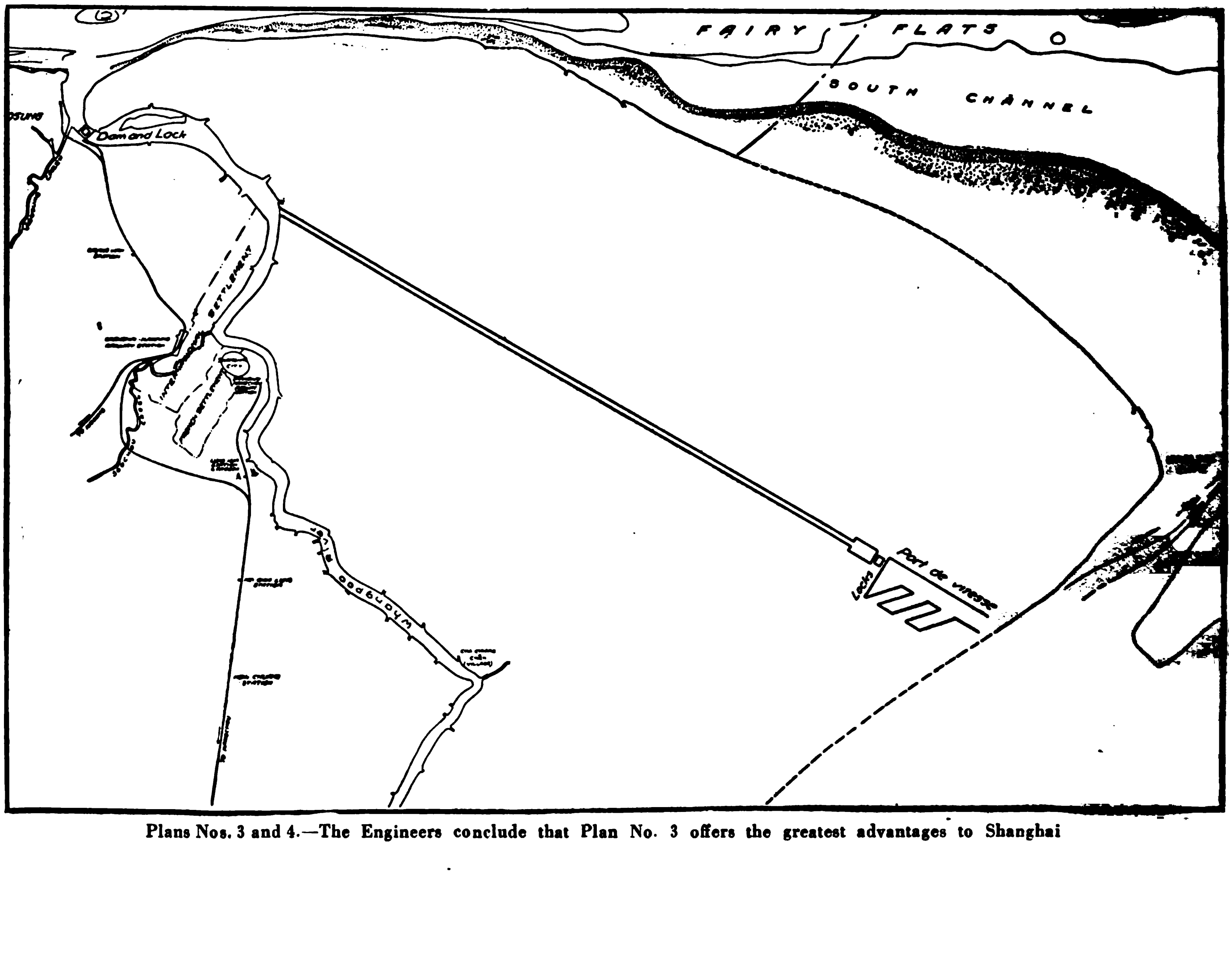
In one of the memoranda presented to the board, the suggestion was made that the lower part of the Whangpoo should be transformed into a dock harbor raising the lowest water level by about 10 feet, but the possibility of utilizing this scheme was limited as long as big vessels would have no object to lengthening their voyages beyond Woosung.

In Plan 3 many of the difficulties encountered in the other projects were eliminated. This provides for damming up the entrance to the Whangpoo at Woosung, and connecting it with the proposed express port by a short canal at Shachiang where the river makes a right angle turn. The depth of the water in the river would be increased by about 10 feet by this scheme and would thus in most places be sufficient to meet the demands of the immediate future. The damming up would equally affect the cost of the maintenance of the channel, as by shutting out the tide water, the most serious dangers from silting would be removed. A comparative estimate of costs owing to the comparatively short stretch of canal favors the adoption of Plan 3. The engineers conclude that of all the schemes discussed, Plan 3 offers to Shanghai the greatest advantages.

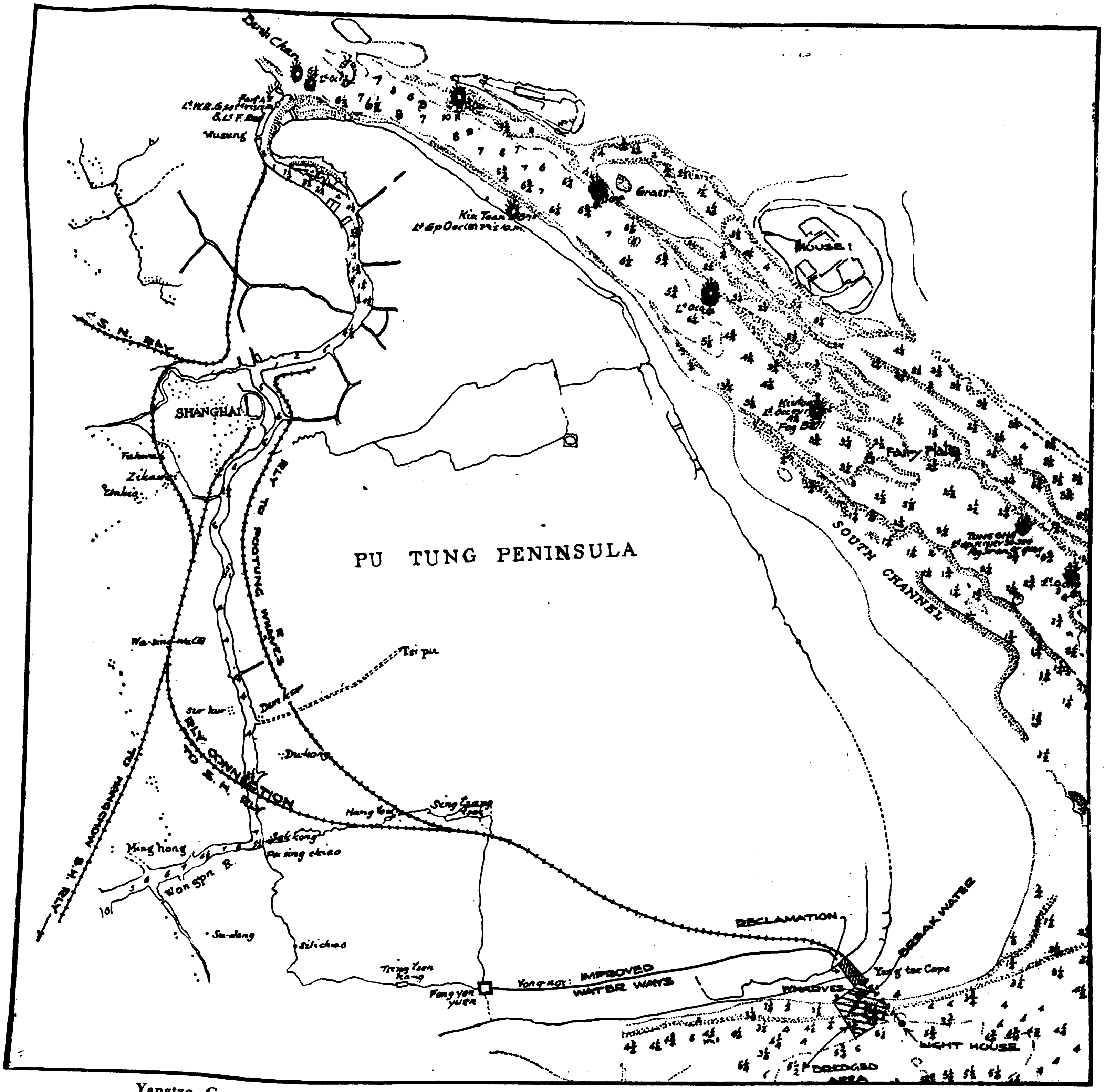
Other projects having the same object in view have also been published, notably one drawn up by Mr. Sidney J. Powell, A.M.I.C.E., who proposed a harbor just inside the Yangtze Cape connected with Shanghai by railway, to be constructed as a private enterprise at a cost of Taels 17,300,000. Mr. Powell proposed the organization of a syndicate to be called the Shanghai Deep Water Port and Harbor Company, which would undertake the construction and turn it over when completed to a port trust constituted as part of the Shanghai Municipal Council with Chinese participation. Mr. Powell estimated that by an impost of one-half per cent. on the value of imports and exports passing through the port the undertaking could be paid for in six years. Calculating the gross volume of trade at Taels 600,000,000, this would provide Taels 3,000,000 per annum.

Mr. Powell's prospectus brought out very clearly the economic





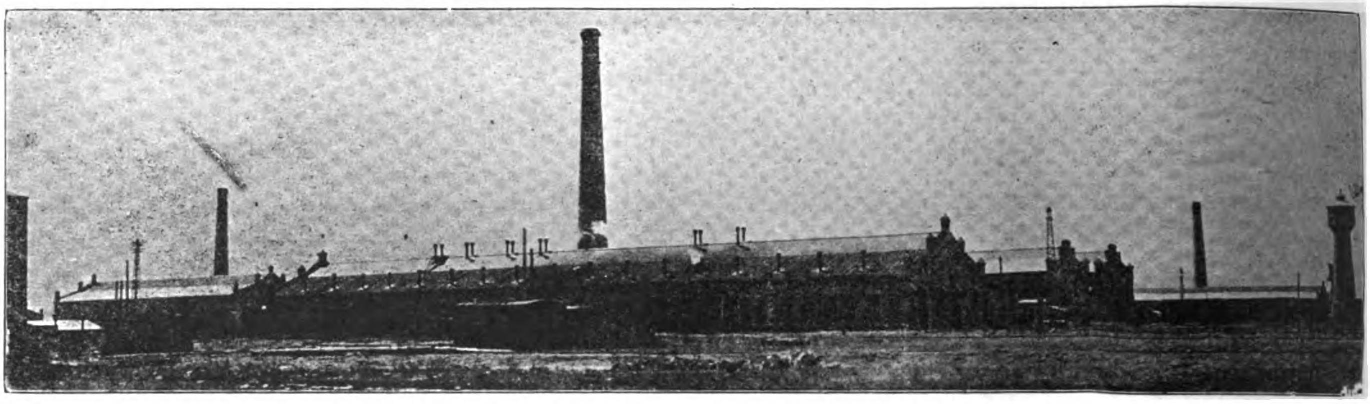
Plans Nos. 3 and 4.—The Engineers conclude that Plan No. 3 offers the greatest advantages to Shanghai



Yangtze Cape Harbor and Shanghai Deep Water Port. Map Showing Position with Railway and Water Connections, Scheme proposed by Mr. Sidney J. Powell, A.M.I.C.E.

and other reasons calling for the construction of such a port, which, summed up, are that a harbor near the Yangtze Cape puts Shanghai 28 miles nearer to cheap transportation and saves the Settlement from imminent congestion and ultimate ruin. Besides, steamers drawing 32 feet of water can never be economically berthed in the Whangpoo. He concludes with the truism that "those ports are most isolated from the markets of the world which fail to come up to the modern requirements of trade and shipping."

Meanwhile the conservancy board has been hard at work on the problem and conducted extensive surveys of Hangchow Bay in order to provide the necessary data upon which to base eventual plans for an "Express Port." The result of these careful and pains-taking investigations have been made public in a special "Report on the Hydrology of the Hangchow Bay and Chien Tang Estuary," which covers a period from April 1919 to January 1921. The only harbor sites worthy of consideration in relation to Shanghai are located along the northern coast of the bay from Chapu to the Yangtze and important data is now in the possession of the board upon which a more definite selection of a port can be based. One of the most important parts of this report is the valuable collection of data concerning the celebrated Hangchow Bore. The result of the investigations has determined the depths in the bay, navigable channels and approaches thereto, the exact geographic position of the north coast of the bay and the depths off this shore. In addition, it has been determined what changes are in progress in the bay or likely to develop and the extent that tidal currents and weather affect navigation. A survey of the outlying islands of the Chusan Archipelago, has also been made.

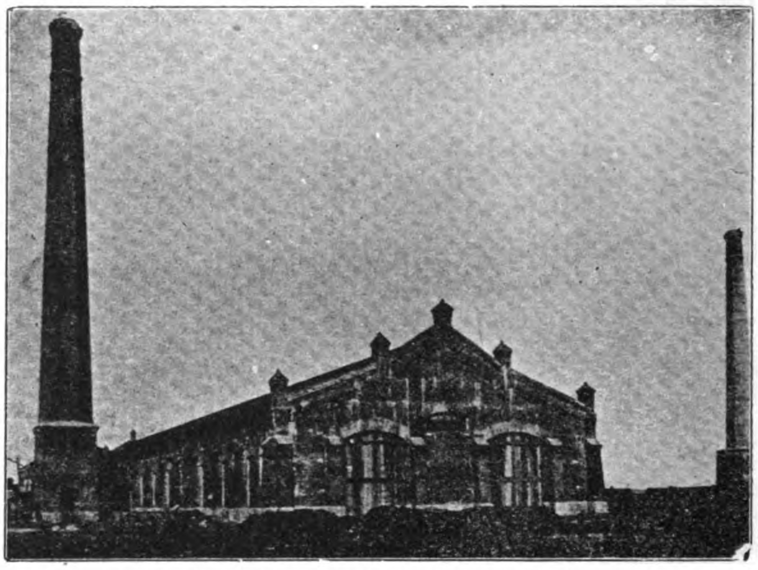


Chinese Eastern Railway Car Shops at Harbin

Russian Foundry Practice in the Harbin Shops of the Chinese Eastern Railway

LIEUTENANT Charles E. Lee of the American Expeditionary Force know as the Russian railway service corps was sent to Harbin in November 1917 to exercise, amongst other duties, general supervision over the railway repair and maintenance shops of the Chinese Eastern Railway. Before entering the service Mr. Lee was superintendent of the South Bend Foundry Co. and is now with the Buick Motor Company at Flint, Mich. Lieutenant Lee was a good observer, and has contributed his impression to *The Foundry*, which he describes the foundry practice as he found it at the shops of the Chinese Eastern Railway. He says:

Most of the railway stock on the Trans-Siberian railroad is imported, but extensive repair shops are maintained at all the divisional points including that at Harbin, which as has already been stated is the junction where the line running to Port Arthur and Dalny joins the main line. Whatever railroad systems and methods the Russian commission studied while in the United States it is quite evident that they did not see any railroad repair shops. The methods and equipment in vogue in the railroad shop in Harbin are archaic, while the workmen move at a pace that is unbelievably slow.



Machine Shops of Chinese Eastern Railway

The foundry building is solid brick, the walls being 30 inches thick at the bottom and ornamented on the outside by an elaborate system of pilasters and copings. The only windows in the building are in the ends and as a result the interior of the building is quite dark. A little additional light is furnished through a few poorly constructed skylights in the roof. The main bay of the shop is equipped with two 10-ton electric traveling cranes and several side wall jib cranes. The latter are never used.

Any casting over a few hundred pounds in weight in this foundry is made in a flask and dried in the oven. All the remainder of the work, no matter how small, is bedded in the floor. The only exceptions to this rule are the oil boxes or journal boxes. These are made in flasks on a machine. The oil boxes in use on the Russian railroads differ materially from those on American roads. They are cast in halves, the joints planted in the machine shop and the two halves afterward bolted together. The only function of the molding machine in making the boxes is to roll the drags over. The inside of the box is made with a dry sand core and the cope is perfectly flat.

No system is observed in making cores as each man makes his own cores in close proximity to his job. Small stock cores are made by boys in any convenient place. The cores are made from a natural loam which does not require any binder. A certain amount of manure is mixed with the loam to give it porosity. The cylindrical cores all are swept on barrels wound with hay rope. All the cores are dried in the same ovens as the molds. The ovens are poorly designed and constructed and as a result are slow dryers.

Two cupolas are provided for melting the metal, one of three tons, and one of five tons capacity. The metal does not accumulate in the furnace but runs into a receiver as fast as melted. This receiver or forehearth is attached to the front of the cupola, the bottom resting on the poor. It is provided with a slag hole near the top on one side which serves to warn the melter when it is time to tap the metal. The hole also serves to remove most of the slag. The receiver is enclosed but there is a section in front which is detachable and can be removed to fix the bottom every day. After the bottom is made ready and a quantity of wood placed to dry the inside of the vessel, the doorway is daubed with clay and the door clamped tightly in place. The fire which dries the inside of the chamber also dries the mud at the door joint sufficiently hard to prevent the metal from leaking through. A vent pipe, for which there is no obvious reason, is connected to the top of the receiver and is attached higher up to the shell of the furnace. An excellent grade of iron and coke are available, both being imported from European Russia. The iron is high in silicon and phosphorus and it is possible to pour large castings although the metal is melted neither hot nor fast.

A general idea of the operation of the shop may be gained from a study of the following items taken from a typical monthly report of men employed :

Iron Foundry		
Molders	103	
Helpers	29	
Apprentices	23	
Chippers	36	
Cupola men	18	
Brass furnace men...	18	
Carpenters ·	6	
Painters	1	
General labor	43	
	—	277
Babbitt Shop		
Mechanics	7	
Helpers	2	
Labor	5	
	—	14
Pattern Shop		
Patternmakers	25	
Helpers	1	
Apprentices	3	
Labor	5	
	—	34
		—
Total foundry force		325

In addition to the force of 325 men there was one general foreman ; one foreman in the iron foundry ; one in the brass foundry and one in the pattern shop. The office force included three men and one girl. Most of the workmen were Chinese with a few Russians. Compare the number of men with the output for the month in Russian poods. The pood is 40 Russian pounds or 36 pounds avoirdupois. The total output for the month of April, 1918, is shown in the following table :—

Total Output for the Month of April
Twenty-three Working Days

IRON CASTINGS	
Ponds	Tons
8,085	145
BRASS CASTINGS	
Poods	Tons
369	6.64
BABBITT LINERS	
Poods	Tons
1,333	23.99

Analyzing this table we find that the total output of iron, brass and babitt amounted to 175.63 tons for the month. There were 23 working days in the month and this gives an average of 7.64 tons a day or approximately 10 per cent. of what a similar American shop would turn out in the same time.

There is another railroad shop at Nicolsk-Ussurysk, but it is much smaller than the one at Harbin only employing 45 men altogether, all Russians. In August, 1919, this shop turned out 52,740 pounds of iron castings and 4,585 pounds of brass, an average of 2,397 pounds of iron and 208 pounds of brass a day.

Iron is cheap and the amount of return scrap is so large that no attempt is made to economize. The dump is full of iron which has been wheeled out with the refuse.

Philippine Bureau of Supply

The classified civil-service personnel of the bureau on December 31, 1919, numbered 121, all of whom were Filipinos, the only one American employee remaining in the service during the year having been granted retirement effective the date mentioned.

The year was a record year in the volume of work handled by the bureau. The purchases amounted to P18,873,789.27, or an increase of P6,210,286.59 over those of the previous year, while the sales totaled P18,159,825.82, or an excess of P5,317,110.87 over those of 1918. The gross earnings, exclusive of the division of cold storage, amounted to P1,086,995.63, which exceeds those of the previous year by P186,292.45; and the cost of operation was P462,176.30, which is P85,983.97 over that of 1918, thus giving a net gain of P624,819.33, or an increase of P100,308.48 over the profits of the previous year. This does not include the purchase and sale of rice.

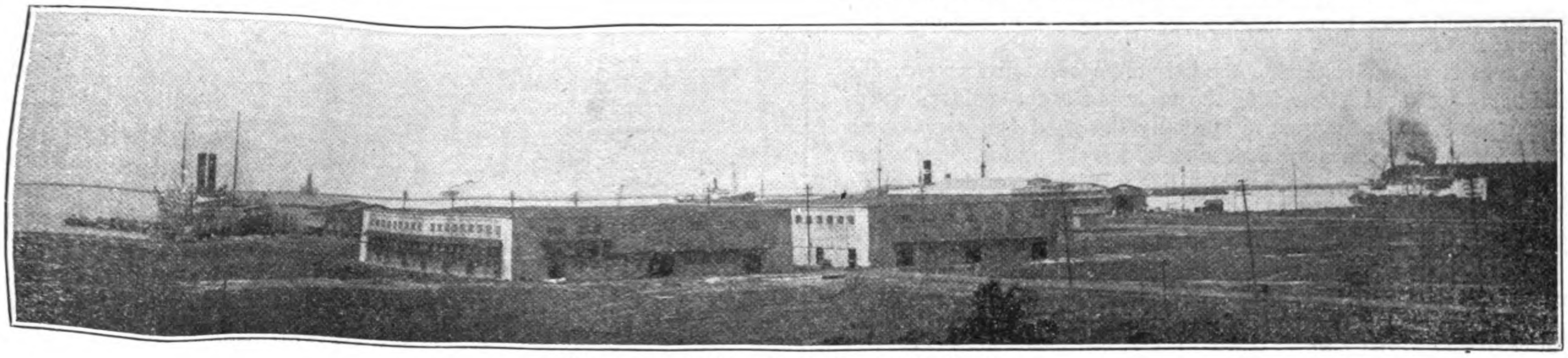
From the operation of the ice plant the bureau obtained a gross earning of P723,117.31, or an increase of P147,195.47 over that of the previous year ; the expenses amounted to P486,946.11 or an excess of P58,342.74 over those of 1918, thus leaving a gain of P236,171.20 as compared with P147,318.47 for 1918. If from this amount the cost of furniture and equipment aggregating P5,621.17 bought during the year is deducted, a net gain of P230,550.03 would still remain.

The number of requisitions received was 16,464 or 1,470 more than those of the previous year, giving an average of 1,372 per month. Of these requisitions 9,903 came from bureaus and offices of the insular government and 7,461 from provinces and municipalities.

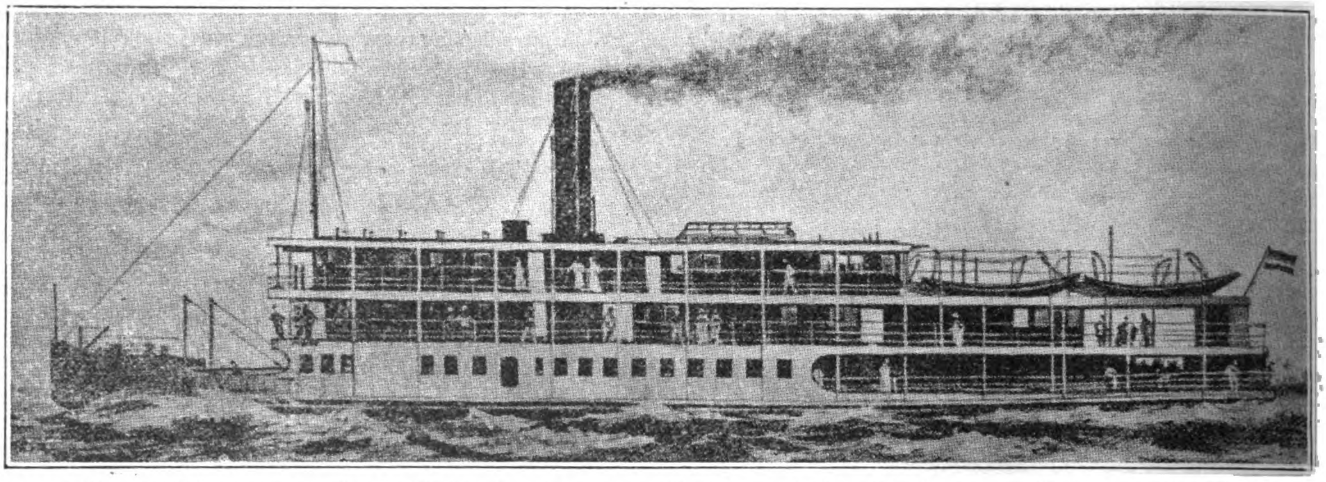
The deliveries made totalled 648,617 packages, 1,155,096 board feet of lumber, and 49,575 tons of cargo shipped by water ; 278,982 packages, 2,432,060 board feet of lumber and 14,809 tons of cargo sent by rail ; and 5,008,891 packages, 3,176,436 board feet of lumber and 61,477 tons of cargo sent within the limits of the city of Manila.

The year was also a recorfi year for the lumber yard and sawmill. The receipts and issues of the lumber yard amounted to 6,833,830 board feet and 4,342,445 board feet, respectively, as against only 3,985,336 received and 4,220,270 issued during the previous year. The sawmill turned out 3,901,322 board feet of lumber of different finishes, producing a revenue of P49,111.64.

In the rice crisis which occurred during the year, this bureau played an important part which did much to relieve the people of its disastrous effects. This consisted in providing this cereal to those regions where shortage existed and in making an equitable distribution of the same. The number of sacks of rice purchased to fill the numerous requisitions received during the period from July 1 to December 31, 1919, was 631,395 sacks valued at P10,536,293.88 The sales amounted to P10,983,417.47.



Bureau of Supply Bodegas, Manila City



Shallow Draft Steamer "Anning" Designed and constructed by Yarrow & Co., Ltd., Scotstoun, Glasgow, and fitted with Yarrow's Patent Improved Balanced Flap. Length overall, 190-ft. Beam moulded, 30-ft. Depth moulded to Main Deck, 8-ft. Draft with 260 tons on board, 5-ft. Speed, 15 miles per hour.

A New Yarrow Steamer for the Yangtze

ON May 9th, Mrs. H. E. Arnold performed the ceremony of launching the s.s. *Anning* at the yards of the New Shipbuilding and Engineering Works at Shanghai. The vessel was shipped out from the builders, Messrs. Yarrow & Company, of Glasgow, in a "knock-down" state and constructed at the above yards.

The *Anning* has a length overall of 190-ft., beam 30-ft., and the depth moulded to main deck 8-ft. The hull is divided into 19 compartments by transverse and longitudinal bulkheads, and watertight doors are fitted to the bunker bulkheads.

There are four decks, namely, the main decks upper deck, boat deck, and awning deck, as shown on the accompanying photograph.

The accommodation for European and first-class Chinese passengers is on the boat deck, and consists of a dining saloon, six 2-berth staterooms for Europeans ; a dining saloon, and nine 2-berth and one 4-berth cabins for first-class Chinese. Also pantry, galley, bathroom, w.cs., cook and boys' cabin.

The accommodation on the upper deck consists of captain's, chief engineer's, and chief officer's cabins, second-class Chinese dining saloon, nineteen 4-berth and six 2-berth second-class cabins, purser's office and cabin, bathroom and w.cs.

On the main deck there is accommodation for 206 Chinese steerage passengers, fifteen firemen and three Chinese engineers.

In the forecastle there is accommodation for four petty officers and twelve men, and there is also a mess place for fourteen cooks and boys.

The vessel is lighted throughout by electric light, the current being supplied by an oil-driven dynamo so as to obviate the necessity of keeping up steam when the vessel is moored for the night.

There are five separate holds for cargo, having a total capacity of 16,000 cubic feet, which corresponds with a deadweight capacity of about 260 tons at 5-ft. draft.

Tkere is a special double-headed steam capstan forward, one head being arranged for working the anchors and for ordinary warping purposes, the other being specially designed for warping up the rapids at such times as these may be too strong for the steamer to navigate under her own power. Large rollers are fitted on the berthing for bringing in the warp.

Strong bollards and fairleads are arranged both forward and aft.

The main propelling machinery consists of two sets of triple-expansion surface condensing engines of Yarrow & Co.'s standard design, having large bearing surfaces suitable for the special service in which this vessel will be engaged. The engines are capable of developing about 2,000 I.H.P. collectively.

The condenser is of the "Weir Uniflux" type, and the usual air and circulating pumps and other auxiliary engines are fitted, including an evaporating plant.

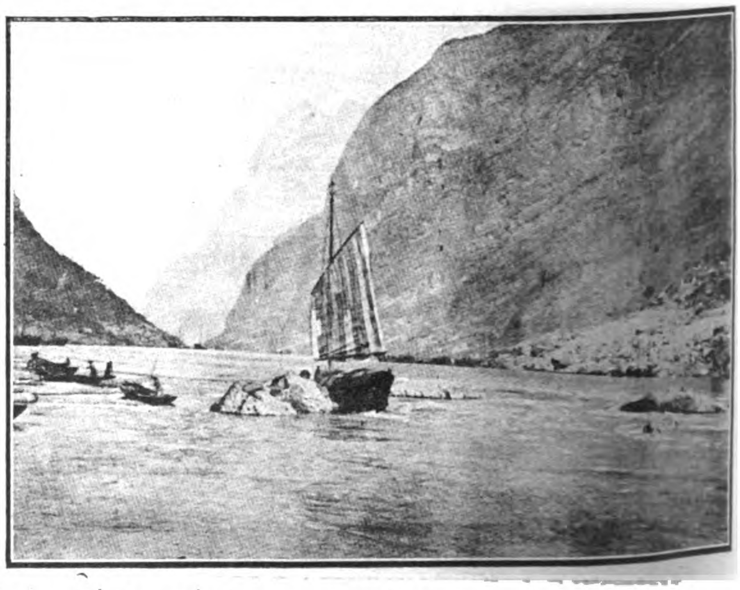
The boilers are two in number, of the Yarrow patent double-ended type, each boiler being fitted with an independent funnel; they are arranged to burn coal only, and two fans are fitted for providing forced draught.

The main and auxiliary feed pumps are by G. and J. Weir, Ltd.

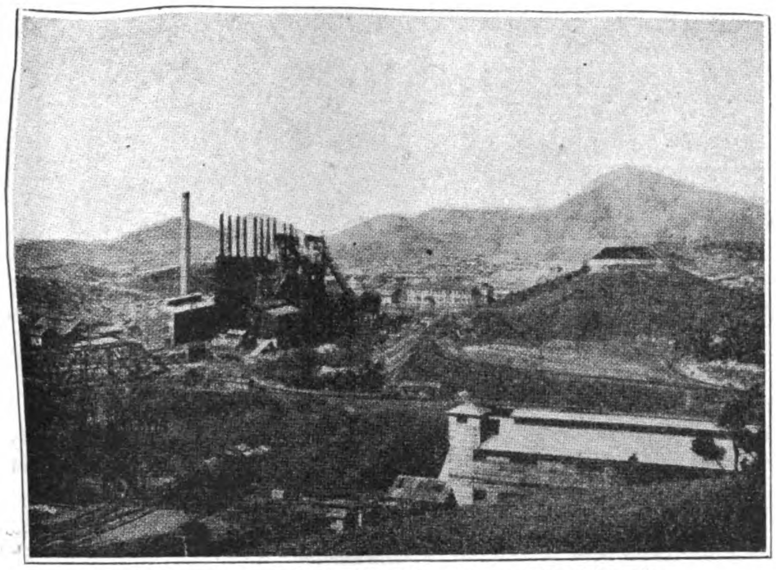
The propellers are of large diameter suitably designed for transmitting the large power which the engines develop. They work in tunnels fitted at the after end with the Yarrow patent automatic flap, which system was so successful on the *Shu-hun* and numerous other shallow draft vessels, and which ensures the maximum propulsive efficiency at whatever draft the vessel may be loaded to.

A large and more powerful vessel for the same run is under construction at Messrs. Yarrow's works, which will also be arranged for carrying passengers and cargo, and is equipped with the same arrangement of propeller tunnel and hinged flap.

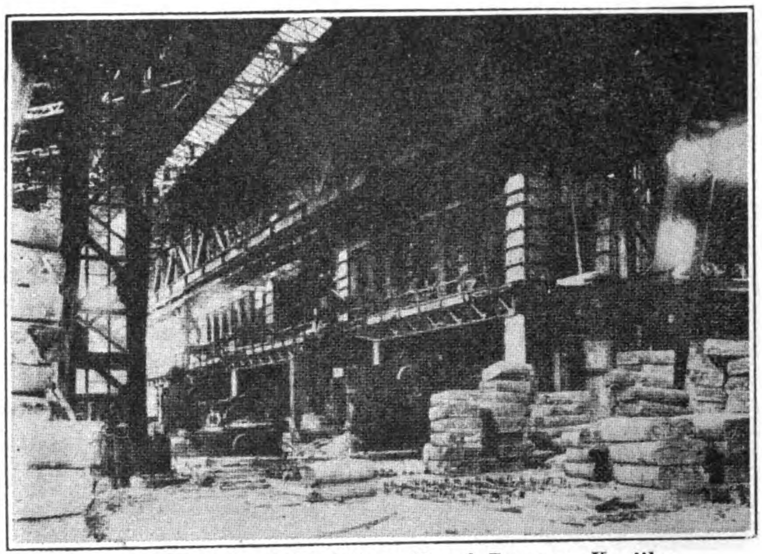
It is expected that there will be great developments in the shipping on this reach of the river. There is no doubt but that many vessels similar to the *Anning* could be most profitably employed there.



On the Upper Yangtze where the "Anning" will ply.



General View of the Kenjiho Iron and Steel Works



View of Casting Side of Open Hearth Furnaces, Kenjiho

Kenjiho Iron & Steel Works

FROM a national point of view, and with the ever increasing necessity of meeting the growing demand for shipbuilding materials and all other engineering purposes, the Mitsubishi Goshi Kaisha has for many years paid special attention to the manufacture of iron and steel and has given much study to this branch of business. Since the company bought the iron mine at Kenjiho, Kodai-do, Korea, in 1911, it has gradually absorbed the neighboring mines. In 1913, when Taiho-men colliery, Heian-nan-do, Korea, and the limestone mines at Kenjiho came into the possession of the company, a large scheme was projected for iron production at Kenjiho, and in May 1915, the Preparatory Iron Foundry Department was duly opened for the purpose of establishing the iron works. These preparations having been satisfactorily completed, the Mitsubishi Seitetsu Kaisha, Limited (The Mitsubishi Iron & Steel Company, Ltd.) with a capital of Y.30,000,000 was established in October, 1917, and all the aforesaid business and plant were transfered to this new company.

The first tapping of the blast furnace was performed in June 1918, and the production has been going on smoothly ever since. The plant comprises the following:—

Blast Furnace Department.—Two stacks, 70 by 19 feet, each with four 92 by 20 feet McLure central combustion type hot blast stoves; fuel consumed own prepared; total annual capacity 100,000 gross tons foundring and open hearth furnace pig iron.

By-Product Coke Department.—Fifty Wilputte ovens, each 39-ft. 5-in. long, 15-ft. 5½-in. high, 17¾-in. mean width and 13 gross ton charge capacity: total annual coking capacity 128,000 tons: By-Product: 2,000 tons sulphuric acid, 1,800 tons sulphate of ammonia, 4,600 tons pitch, 800 tons heavy oil, 900 tons medium oil, 250 tons light oil and 600 tons napthalene.

Open Hearth Department.—Contains one 200-ton molton metal mixer (under construction) and three 50 gross ton open-hearth steel furnaces: fuel consumed, producer gas; annual capacity 100,000 gross tons ingots.

Blooming Mill.—Contains four hole, six ingot, vertical ingot heating furnaces and one two-high reversible 900 m.m. mill: annual capacity 300,000 steel blooms and slabs.

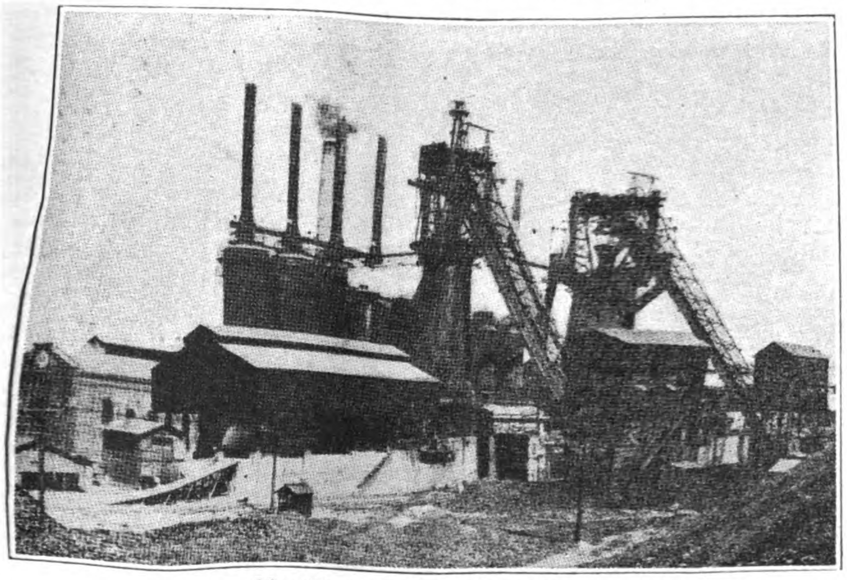
Structural Mill.—Contains one Siemen's continuous bloom heating furnace and one 28 inch three-high roughing and finishing mill train; annual capacity gross 900,000 tons structural and other shapes.

Plate Mill.—Contains one three-hole, four ingot, vertical ingot heating furnace, two Siemen's horizontal charging reheating furnaces and one 110 inch three-high thick plate mill: annual capacity 100,000 gross tons ship, boiler, structural, etc., plates up to 2-in. thick, 9 feet wide and 35 feet long.

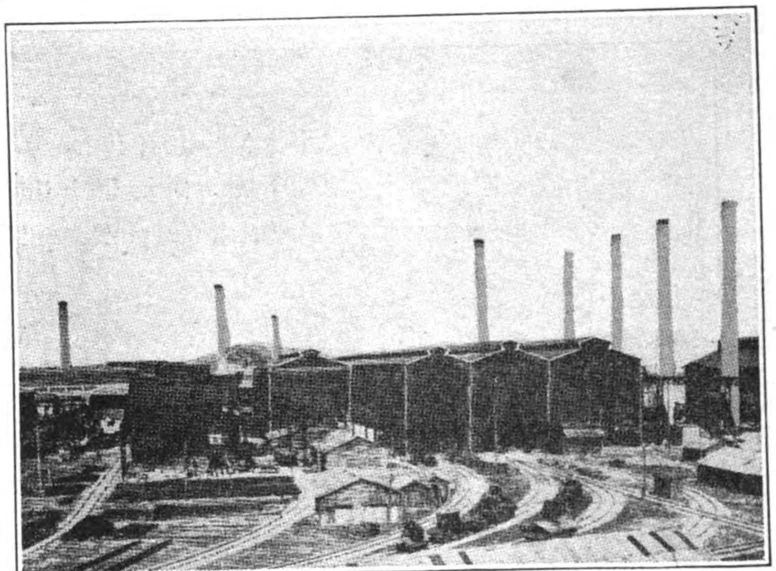
Brick Department.—Annual capacity 6,000 gross tons fire bricks and more than seven millions slag bricks.

Name of Colliery.—Taiho-men (Heian-Nan-Do).

Names of Ore Mines.—Shorin-men (Kokaido), Kasei-men (Kodaido), Nido-men (Kokaido), Sainei-men (Kokaido), Ginzan-men (Kokaido), Furin-men (Heian-Nando) and Taikwan-men (Keikido).



Blast Furnace Plant, Kenjiho



General View of Steel Works from the East, Kenjiho

German New Guinea

Australia's New Task

By Thomas J. McMahon, F.R.G.S.

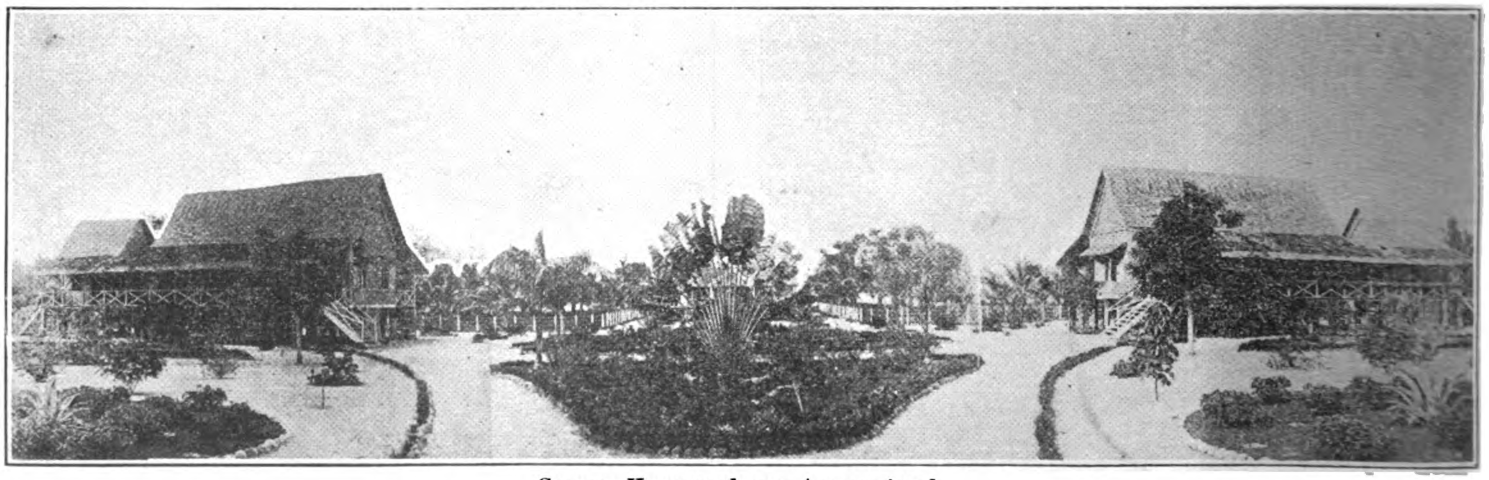
GERMAN New Guinea is a second Java. It is reckoned that under a progressive administration in ten years time it will vie with the present commercial progress of Java. Cocoanut, rubber, coffee, cocoa, and many tropical products which grow in the most prolific manner, can be cultivated cheaply and quickly.

Under its German government prior to the war the territory was exceedingly prosperous and German enterprises were much encouraged. The result to-day is that the plantations of cocoanut, particularly, are some of the largest, finest, and most profitable in the island world. There were many signs of wealth with the German planter. His mansion was one of true German commodiousness, and comfort, invariably surrounded by a small, well-kept park, bright gardens in which fountains played, and statuary gleamed. The planter lived in a style comportable only with great wealth, and he was famous for his hospitality, and the lavishness of his entertainments. It cannot be questioned but that the Germans are remarkable colonizers ; and no island group in the whole of the South Pacific was so widely, and successfully developed than German New Guinea.

Government Road through Jungle

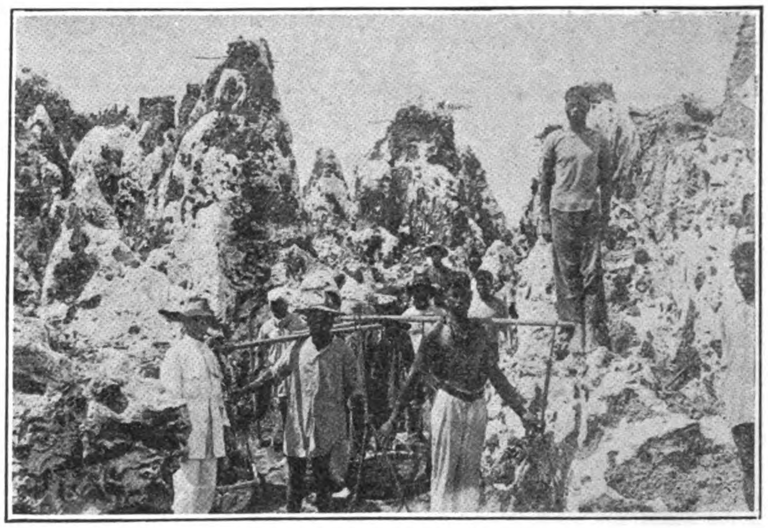
In the time of German ownership this scattered territory comprised Kaiser Wilhelm's land—a large slice of the big island of New Guinea—the Bismarck Archipelago and groups of small islands dotted over a vast expanse of sea. Then there were the German Solomons, the tiny island of Nauru, famous for its phosphate, the Carolines, Marshalls, and Marianne groups, in extent the whole many thousands of square miles. The population of the territory was and is still approximately 5,000 Germans, 300 Australians, 1,000 Chinese, 1,000 Japanese and Malays, and 700,000 natives. To-day under the powers of a mandate German New Guinea is being administered by Australia. All through the war, and up to two years ago the commercial prospects of the group were eminently satisfactory, but Australian industrialism in its frequent strikes and its hold-up of island shipping for long periods, has seriously crippled trade, and hampered developments. And now the Australian federal government in its unlimited powers under the mandate has decided that all German settlers will be bought out, and deported. The work of expropriation of German estates has been going on for some time, and the German settlers are being warmly welcomed in Java, a degree of anxiety is being felt by some Australians as to the wisdom of this action, and the experiment of placing Australian soldiers on the plantations is being watched with the greatest interest and concern. Should Australian administration of the group be progressive and free from the influence of commonwealth politics, then very few years will be enough to show that Australia has been given the richest territory prize of the war.

Australian military administration of German New Guinea during the war was most competent and successful, and its legislation dealing with the health of the white settlers, in combating the the vicious mosquito and malaria is some of the wisest in the tropic world. The most drastic regulations for sanitation and laws governing the public health were rigidly enforced. In all centres, plantations, trading and mission stations, even in native villages near the whiteman's settlements, notices were posted up as to the proper means of destroying the mosquito. The Australian soldiers were an army of health inspectors. Each inspector had his Chinese boss-man, and each boss-man his native workers. These workers were especially trained, and were ever busy cleaning roofs and spouting of houses, flushing drains and tanks, sweeping yards and streets, in short taking particular care that water neither lodged nor was exposed in any open way that would help the mosquito. To such a thoroughness were the regulations interpreted



German Homestead now Appropriated

On a Sheep and Cocoanut Plantation



In the Phosphate Fields of Nauru Island

that the thousands of beautiful shade trees which avenue the fine streets of the German settlements all over the islands were carefully examined for any grooves, or crevices, and these were instantly filled up with cement. The results were wonderful. Malaria, once too common in the group, is in check, and the public health and activities have improved amazingly.

The military administration studied to carry out several of the sensible German ideas of colonization, and as railways could not be built, splendid roads were formed running into every nook and corner of the most populated islands. Gangs of natives keep these roads in excellent repair, some are avenued and shaded for 50 to 60 miles by cocoanut palms, or by other tropical shade trees.

What perhaps is the crowning effort of the Australian military administration is the grand work accomplished in attending to the medical care of the natives. Well equipped hospitals are in all of the islands, and to these the natives are encouraged to come for their ailments. No charge at all is made for attention. Doctors and nurses are constantly traveling through the country to native villages, even to those in which savage natives live. The natives have come to recognize the power of the whiteman-doctor, and the witch-worker or native doctor is now seldom met with. Whole villages consisting of perhaps three to four hundred men, women, and children will walk for days, and many miles to meet the administration doctors when they are on an island.

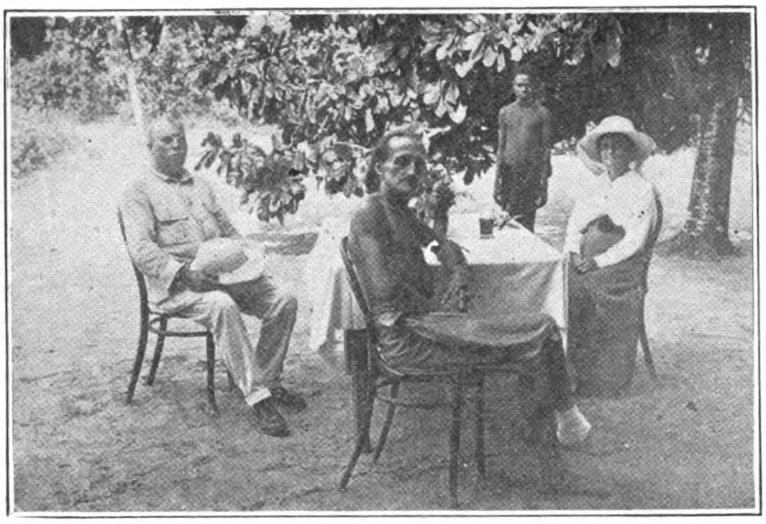
If the Australian administration never did anything else it deserves to go down to everlasting fame for this wise and humane ministration.

The early days of German New Guinea are interesting and even romantic. Fifty years ago a very remarkable woman, Mrs. Forsayth by name, but popularly known as "Queen Emma," came from Samoa and was the first white trader the natives had ever seen. No title suited this energetic woman better than that of "Queen." She had a commanding personality, was strikingly handsome, with charming manners, a most accomplished woman and gifted with a remarkable business ability.

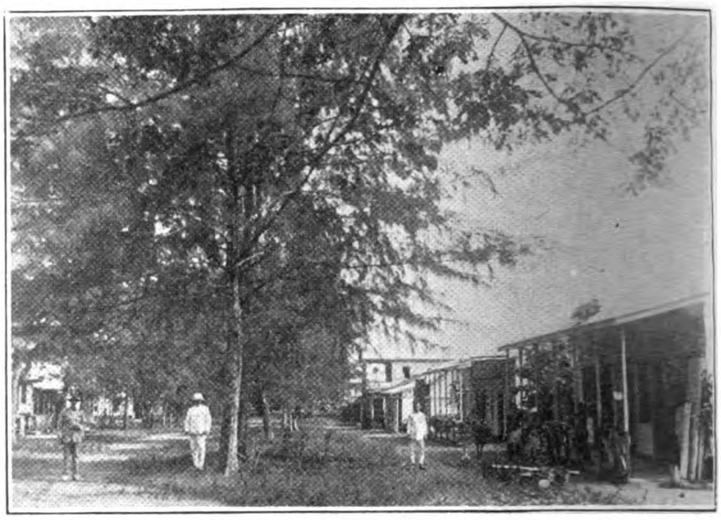
During her life time in German New Guinea she owned cocoanut plantations larger than a number of British counties. As a trader, and coming into direct touch with the natives over whom she always held quite a magic influence, she acquired acres of rich lands in exchange for sticks of tobacco. To-day her plantations are owned by a company, and the profits are hundreds of pounds sterling a year.

An interesting attempt to establish a French settlement of German New Guinea took place some 40 years ago. A rich French nobleman, the Marquis de Ray, after traveling for twelve months in the islands, conceived the idea of starting a new kingdom, himself as king. The territory chosen was the beautiful island New Ireland so called from its evergreen hills. The marquis returned to France and issued an attractive prospectus which was freely distributed throughtout the countries of Europe. In a short time men and women of all ranks, professions, and trades applied for shares in the New Colony. Several vignerons from Italy charmed by the "prodigious fertility" of the land as the prospectus stated, signed on impatient of any delay that held them back from the stretches of vineyards which their excited minds painted. The settlement was begun on the southeast end of New Ireland, an exposed and utterly unfit area. From the very landing of the people the project was doomed to failure. Skilled management was lacking in every detail of organization. Upon the ever rough sea-swept shores of the island lay piles of building materials, machinery for all kinds of trades and industries, boxes of food, and huge cases of clothing. But then it was found there were no nails for the erection of the houses, the machinery was minus many of its essential parts, the food was badly packed and quickly perished, and the clothing was useless being too heavy in texture and totally unsuited for the hot climate. Worse than all, however, was the fact that while there were wines and spirits in abundance, there were no great quantities of medicines, and none to prevent or check tropical fevers and sicknesses. The settlers were harassed by the natives; malaria became common and some of the leaders died from it. Sickness was followed by despair, and in the end, and but a few weeks after their arrival, all returned to the ship eventually finding a home in Australia. Only one young man elected to take his chances on the island, and that man to-day is a cocoanut planter near Rabaul, and is exceedingly wealthy.

A weird but interesting personage is Herr Auguste Englehardt, the "Apostle of the Cocoanut." An Austrian by birth, and exiled from his country for a political offence, Englehardt settled on the beautiful island of Kabakon. He purchased the whole of the island, and had every acre planted with cocoanuts. He died last year worth £60,000. He was a crank, though a most unaggressive and charming one, with the strange doctrine that the cocoanut was the original, and should be the only, food of man. He taught (and had in many countries of the world disciples, in America 600) that living on the cocoanut freed the mind and the heart of man from all wicked passions. He himself subsisted entirely on the cocoanut made up in various salads, and drank nothing but the cocoanut liquid or milk. He was a very thin but very active man, and his unusual diet did not seem in the least to impair his health. The "Apostle" was a man of much erudition, spoke several languages, and possessed one of the largest and most complete libraries in the southern hemisphere. Firm in the belief of his strange doctrine he never forced his opinion on his guests, and while he ate his meagre fare of cocoanut his guests regaled themselves with the freshest of foods and excellent wines. His house was a commodious bungalow the walls of every room having exquisite views painted on them by an artist brought from Austria. On them were scenes of the Danube and of the German University at which the "Apostle" was educated. While the guests slept on



The Author with the "Apostle of the Cocoanut"



Chinatown, Rabaul

the softest of beds, the "Apostle" reposed, and soundly slept, on his bed of sand, which was new spread for him every morning. No better evidence of the thoroughness of German methods of colonization could be given than the settlement city of Rabaul the seat of government, and the capital of German New Guinea. Rabaul is complete with every modern convenience. It is situated an the south end of the island of New Britain, and is one of the deepest, safest, and most picturesque harbors of the South Pacific. The streets of Rabaul are wide, well finished, every one being a cool and delightful avenue of shade from bright, flowering trees. The buildings, public and private, are ornate in the bright colors with which they are painted. They are also artistically designed. At one end of the city is a botanical gardens having every plant, tree and flower belonging to the tropics, and these gardens were laid out and managed by a gardener who came from the Royal Gardens of Berlin.

One section of Rabaul is known as "Chinatown," for here live and work some 700 Chinese. Chinatown is nothing less than a hive of industry, never ceasing night and day, and every day including Sunday. There is nothing German whatsoever about Chinatown. It is a little patch of China, as much as if it was within the walls of Peking. The men, women and children wear Chinese dresses, their trade signs are in Chinese characters, and indeed they carry out Chinese customs just as they would do if in the heart of the great Chinese Republic. There are Chinese tailors who made the Germans white suits, Chinese laundrymen that wash these suits. Every Chinese trade is in full swing, so much so that the streets are crowded at one o'clock in the morning, as they are at one o'clock in the afternoon. The town is lighted by electric light, and at any hour the bang and the twang of Chinese musical instruments can be heard. Chinatown is always full of bustle. Chinese traders are scattered in all the islands of the territory and they get on in a most friendly way with the natives. The German administration did not interfere with Chinese enterprises, and, during it, many Chinese became wealthy, some owning big plantations. Since the Australian administration the Chinese have had their condition improved; where German laws did not protect them and their properties in the past, the Australian laws now give them every freedom, and the Australian court is open to hear and to remedy all their troubles if it can. So far this administration has not put any check upon the entrance of Chinese to the islands, and it is to be hoped that it will not, for the Chinese are useful in many ways, and make excellent boss-man dealing with native labor on a plantation or in a trading store.

Australia has a fine opportunity of showing wise administration in governing the destinies of German New Guinea, and also in promoting the commercial welfare of the territory. Undoubtedly there is a great future for German New Guinea. It had the very best of beginnings in German enterprise, development and general commercial thoroughness. If Australia continues this energtic policy then German New Guinea cannot fail to be one of the most prosperous of the island groups of the South Pacific. It should become the half-way house of a tremendous trade between Asia, and the commonwealth of Australia. Australia is at present working and hoping for a big trade with China, an instrument to assist this endeavor will be to work up a trade in the prouctsd of German New Guinea.

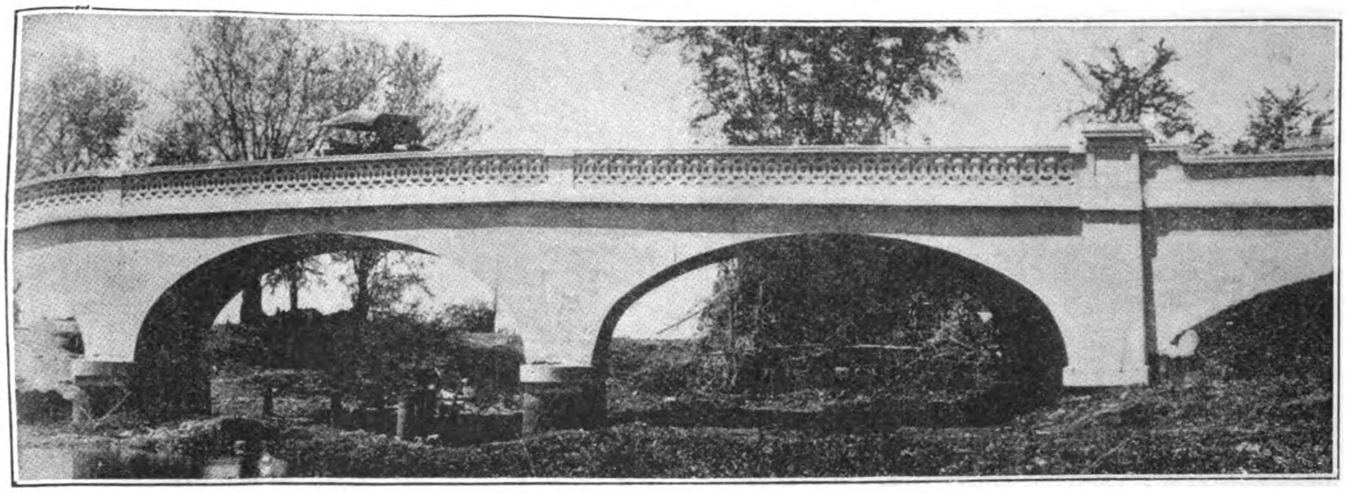
Mr. Bain New Chief of Bureau of Mines

Dr. F. G. Cottrell, director of the United States bureau of mines, who presented his resignation to the President, through Secretary Payne, left the bureau to become chairman of the division of chemistry and chemical technology of the National Research Council. Dr. Cottrell recommended as his successor H. Foster Bain of California, whose name was formally presented to the President. President Wilson later nominated Mr. Bain.

Mr. Bain was educated and trained as a geologist and mining engineer. He was one of Herbert Hoover's assistants in London on the Belgian relief work during the war. In China Mr. Bain has made some extensive surveys and some of his experiences in Yunnan province are especially interesting. At one time he was a mine operator in Colorado and once was connected with the United States geological survey. Subsequently, he was the first director of the geological survey of Illinois.

H. Foster Bain

Mr. Bain was born at Seymour, Indiana. Graduating from Moore's Hill College, Indiana, in 1890, he spent two years at Johns Hopkins University and later received his doctor's degree from the University of Chicago. He has been for many years a prominent and active member of the American institute of mining and metallurgical engineers, the mining and metallurgical society of America, and the American mining congress.

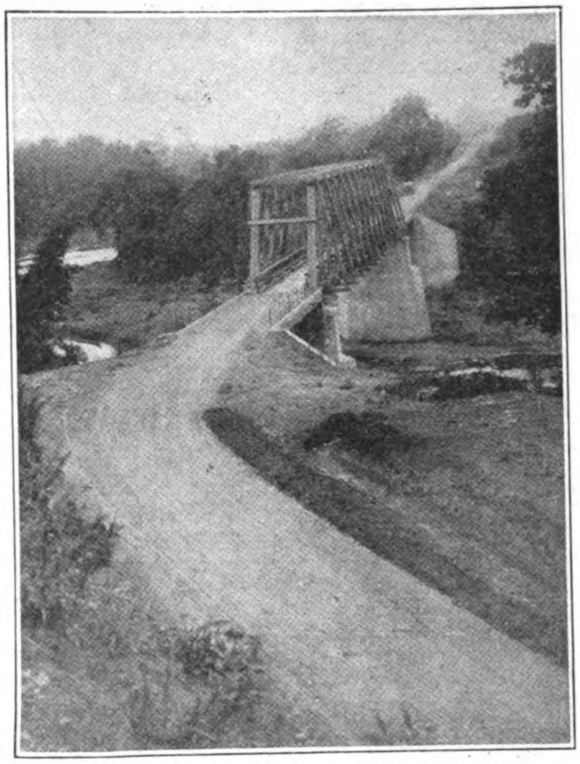


New Concrete Bridge, Philippine Islands

Philippine Public Works

THE much belated report of the governor-general of the Philippine Islands for 1919, has been received. In view of the many criticisms directed against the recent administration of the islands arising largely from the substitution of Americans by Filipinos in the various government departments, the report helps to give a more intelligent insight into what has really been accomplished. Especially is this so in the matter of public works whose force of engineers and trained men were depleted during the war by numbers joining the armed forces of the United States, and it was not until early in 1919 that this situation was partly relieved enabling the bureau to proceed with many important works.

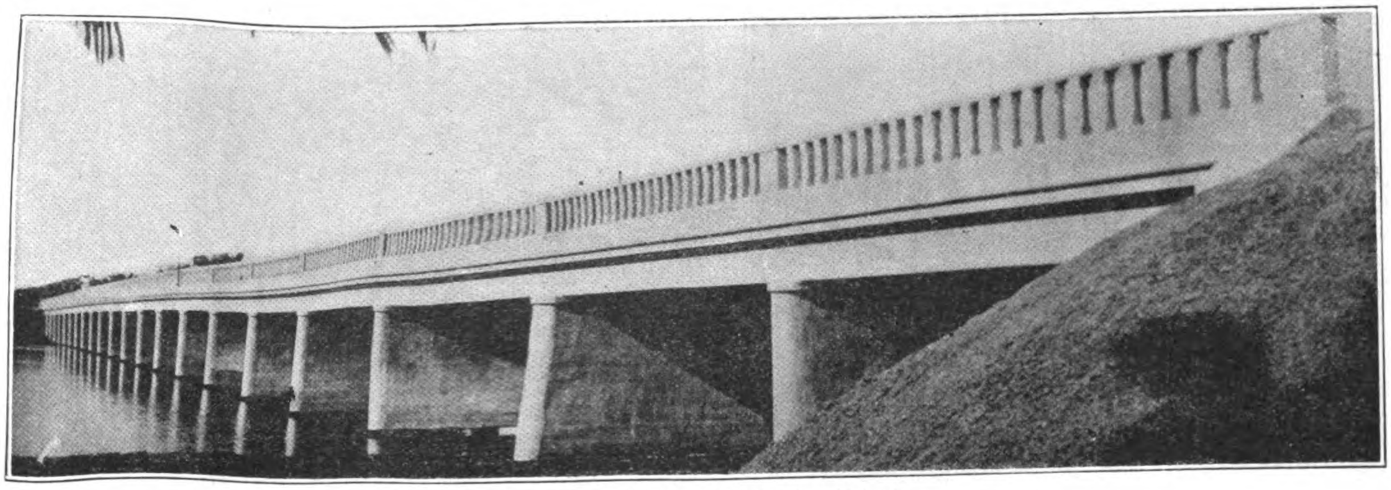
In spite of this fact, however, the number of engineers and architects available during the year was still insufficient and great efforts were required of them in order to execute the whole public works program of 1920.



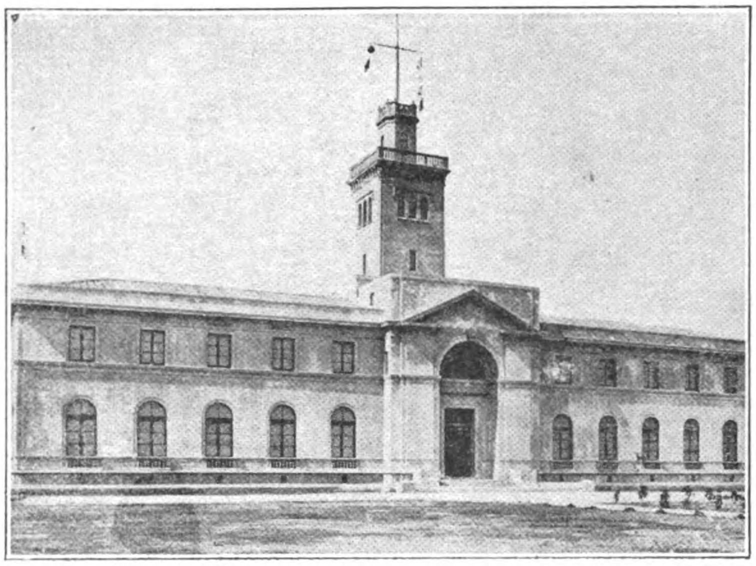
Bridge and Roadway over Palico River, P.I.

While the technical force was thus depleted, the record established during the year compares favorably with previous years. The kilometrage of roads laid out was greater than those built in any previous year since 1916; the number of buildings finished was greater than the number of those completed in 1918; the preliminary steps for the construction of vast irrigation systems were accomplished with such speed that it was possible to start the construction of many such systems in 1920; and the preparatory work for the construction of Pier No. 7, which will be the largest and most modern pier in the Orient, was also accomplished in spite of its extensiveness and difficulty.

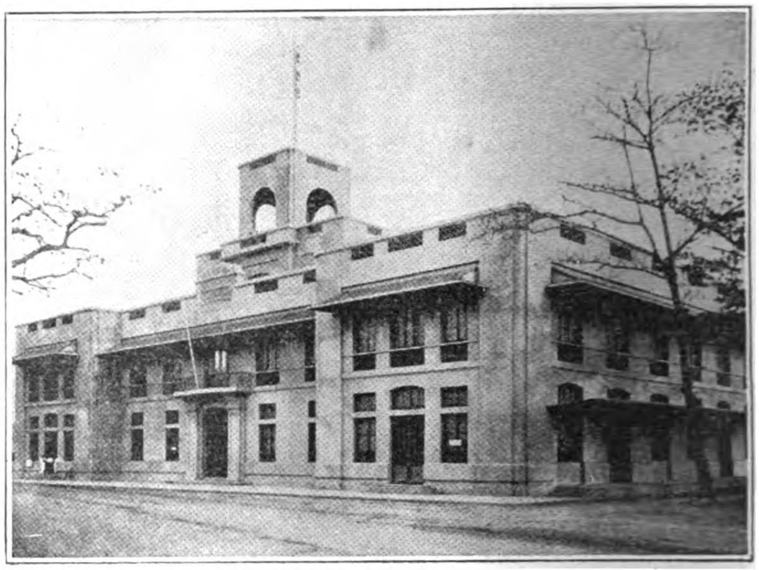
During the year 1919, the bureau supervised the expenditure of the grand sum of P.17,811,289.02, which represents a total expenditure of P.8,966,001.55 for roads and bridges, P.4,792,524.86 for buildings, P.1,608,-418.45 for port works, P.1,382,599.11 for water supply, and P.277,737.86 for irrigation projects, and which in



Harrison Bridge, Philippine Islands



Iloilo Custom House



Cebu Custom House

turn represent an increase of 23.5, 77, 42.4, 20.6, and 130.9 per cent., respectively, over the corresponding 1918 figures.

The big expenditures set forth above had for big results 410.1 kilometers of first-class roads, 46 reinforced concrete bridges and culverts, 163 deep artesian wells, and 37 reinforced concrete buildings of over 100 cubic meters of capacity.

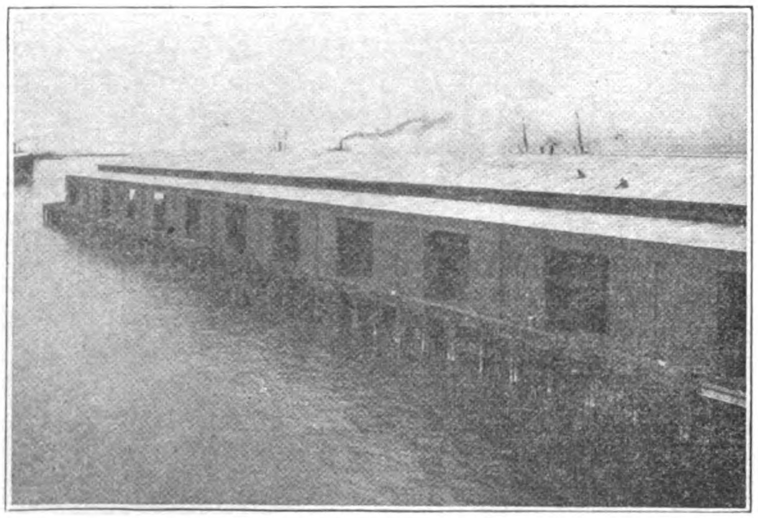
Roads and Bridges

The policy of nationalizing the roads, of making them a connected whole through intercoastal and interprovincial roads, and of making road construction dependent on the transportation requirements and financial ability of each province was continued.

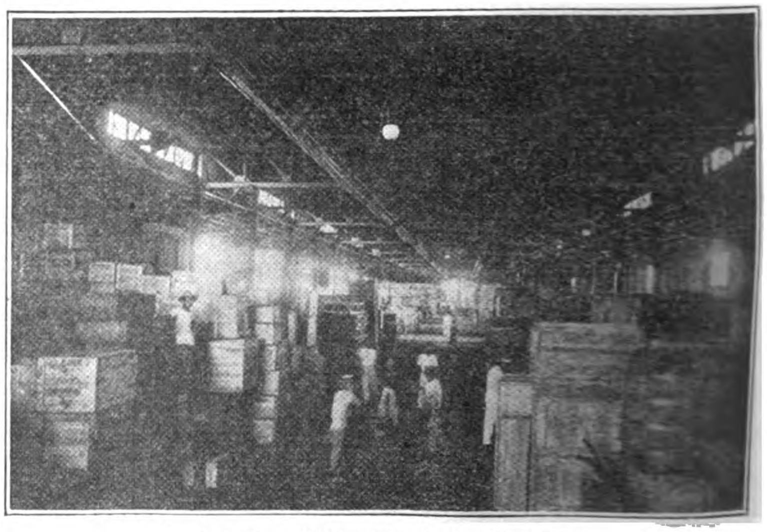
At the close of business on December 31, 1919, there were in existence 4,500.3 kilometers of first-class roads, 1,986 kilometers of second-class roads, and 3,109.2 kilometers of third-class roads as against 4,090.2 first-class roads, 2,015.8 second-class roads, and 3,128.7 third-class roads in existence during the previous year, or an increase of 410.1 kilometers of first-class roads and a decrease of 29.8 kilometers and 19.5 kilometers in second and third-class roads, respectively.

Besides the progress made in increasing the kilometrage of first-class roads and decreasing that of the two other classes of roads, notable advance was also attained in the extent of road surfacing and road maintenance. The figures at hand show that in 1919, 1,452.9 kilometers of road were surfaced with stone, 3,067 with gravel, 1,247.2 with coral, while 3,828.4 kilometers were unsurfaced ; whereas in 1918 only 1,380.7 kilometers were surfaced with stone, 2,838 with gravel, and 1,127.6 with coral, while as much as 3,888.4 kilometers were unsurfaced. As to road maintenance, the figures show that while the kilometrage increased during the year by 3,608, the kilometrage not maintained in 1919 either by the caminero system or the gang system amounted to 1,998.8 kilometers only as against 2,437.8 kilometers in 1918.

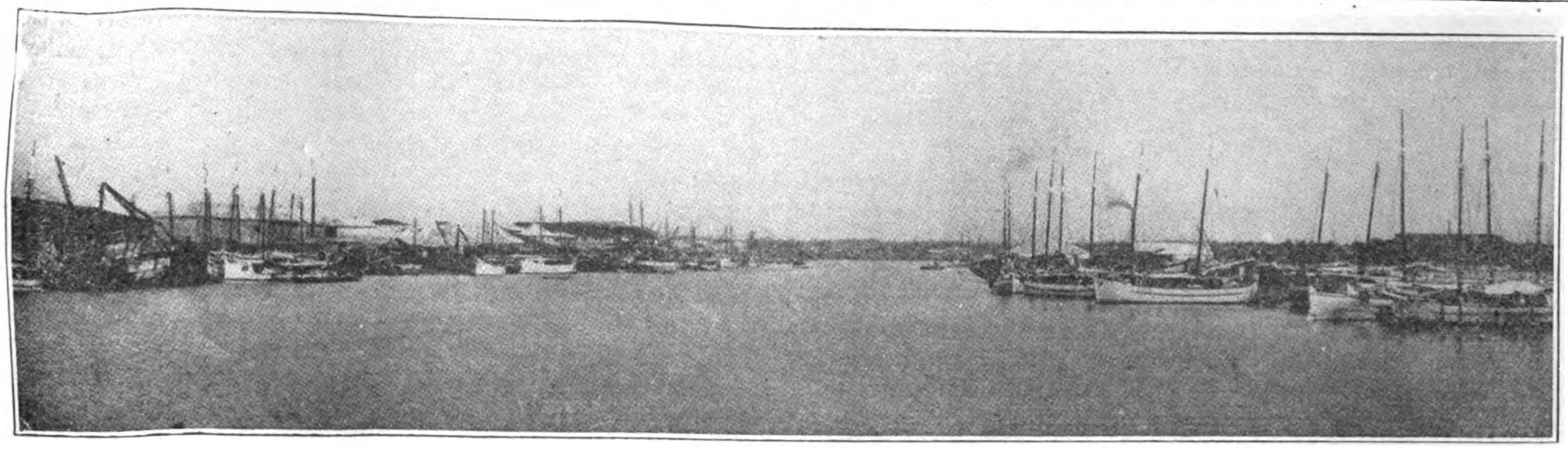
The cost of maintenance in 1919 was P.3,919,560, of which the insular government paid P.810,915. There were 7,310 motor vehicles registered in the islands, a gain of 2,103 over 1918. These are almost entirely of American manufacture. The sum total is increasing very rapidly in 1920, and in addition to the numbers of motor busses, motor tractors are being rapidly introduced. The first-class roads were not originally constructed to support a traffic of this nature, and the question is now frankly mooted whether the McAdam type of road has not entirely outlived its usefulness. The bureau hopes to introduce the surfacing of asphalt or concrete, the difficulty with the latter being the price at which cement is obtained, from Japan P.12 to P.14 a barrel. Plans are under consideration by the government for the erection in the islands of a modern cement factory. If the initial cost of a new type of road surface comes within reason, its adoption will be a capital investment for the government in the saving of maintenance charges. A clear example of the inadequacy of McAdam roadways was the condition of the Manila city streets at the end of 1919. Visitors inclined to be critical could justly complain of the street surfaces, perhaps not taking into account that motor vehicles has increased by one-third during the year, and that for weeks several of the principal streets in August and September were flooded, washed out, and cut to pieces by the passage of heavy vehicles at that time. Add to that the practical impossibility of securing



Port Works, Steel Wharves from Harbor, Manila City



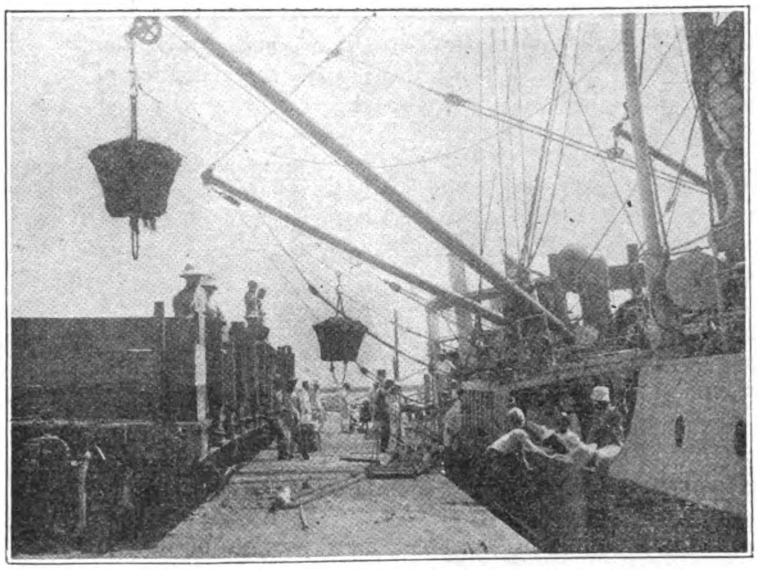
Interior of Pier No. 5, Manila City



Iloilo River and Wharf

good stone for crushing anywhere near Manila, and the engineering difficulties will be better appreciated. An insular bond issue for new road construction may become necessary, but so large a share of the budget is usually appropriated for road construction and repair that given reasonably cheap cement, a concrete road might be built out of income from, say, Los Baños to Quingwa as a beginning. The city of Manila has meanwhile made the usual superficial repairs to damaged streets, and has been authorized to issue bonds for permanent roadways.

As to bridges, in spite of the high cost of materials and labor, several were constructed, as may be seen from the figures given above. The most important were the Buendia Bridge, Calero (now Soriano) Bridge, Parañaque Bridge, San Matias River Bridge, Marusay River Bridge, Catablan River Bridge, Sabang River Bridge, Inabanga River Bridge, and the Miagao River Bridge.



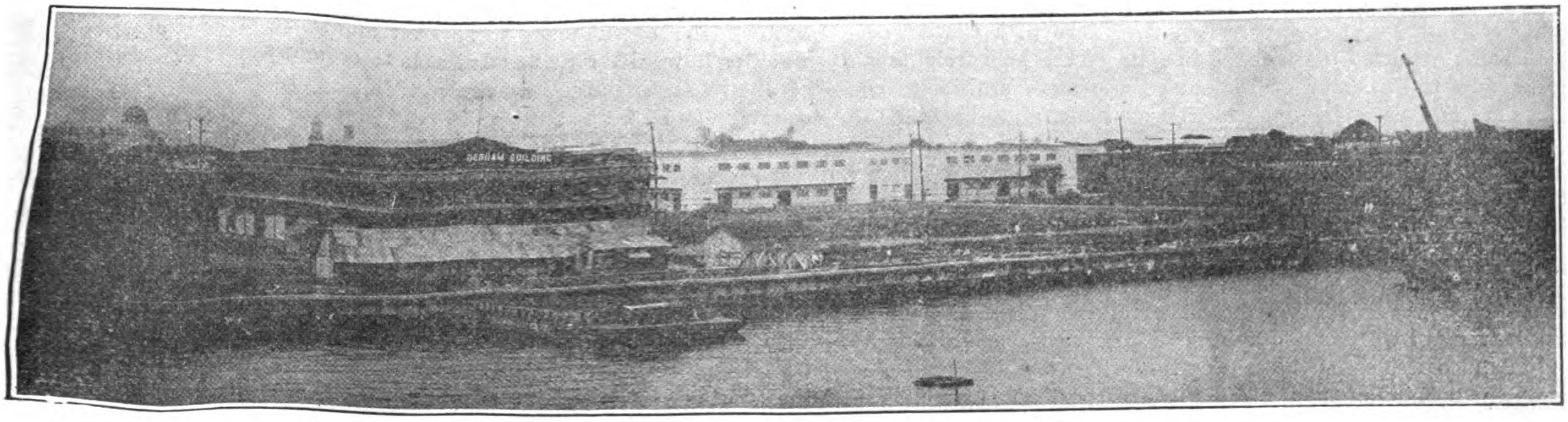
Discharging Coal from Steamer into Railway Cars along the Concrete Sea Wall at Cebu

Port Works

What was said in the reports for 1917 and 1918 about the need of supplementing the network of beautiful roads with docking facilities, of increasing port construction equipment, and of adopting a more ambitious port program for the Philippines with a view to enabling her to reap her full share of the world's commerce may be reiterated. It is gratifying to know that the legislature has at last realized the need of adequate marine terminal facilities and authorized the issuance of bonds for the purpose of raising P.12,000,000 for the construction of port improvements all over the islands.

Conscious of the need for port facilities, the bureau of public works made several studies and investigations of possible port improvements all over the islands and began the construction of various projects. Plans for an intensive improvement of the port facilities at Manila to cost P.40,000,000 were completed. Pier sheds were built between Piers 3 and 5; surveys of all Manila estero, river, and harbor lines were begun; and the preparatory work for the construction of Pier No. 7 was accomplished. This Pier 7 will cost P.3,750,000 and, when completed, will be the grandest in the Orient and the equal of the best in the world. It will be equipped with such modern cargo-handling equipment as will enable ships to clear within one-third or one-half of the time usually required for the purpose. It will have a comfortable passenger waiting room, an adequate baggage room, and a suitable space for the use of customs officials. It will also have an overhead passenger passage which will enable passengers to get to the ship or to the waiting room without going down to the dangerous area below where cargo is loaded and unloaded.

In the provinces much was also accomplished along this line. In Lanao a 430-foot-long wharf was completed and in Iligan, same province, the proposed revetment was started. In Davao the



Manila Harbor, Bulkhead from the Bay

L-type wharf was nearing completion. In Zamboanga a 160-meter sea wall was being built for the Zamboanga Dock. In Sulu the materials for the Jolo wharf were requisitioned, and the construction of the Siasi wharves and the Cagayan de Sulu docks was continued. In Iloilo the construction of the Iloilo River wall was also continued and dredging was carried on in the lower part part of the river channel. In Capiz the hydrographic survey of the port of Libas was finished and the plan submitted for design. In Cebu the reclamation of the area inside of the new dock was continued with success. In Calbayog, Samar, the river wall was 92 per cent. finished. In Dumaguete, Oriental Negros, the construction of the causeway and temporary platforms was begun. In Romblon, the topographic survey of the Romblon wharf site was completed. In Palawan the construction of the Coron Dock was continued. In Sorsogon the sea wall was about 50 per cent. complete. In Tayabas the materials for the Boac Pier, which will cost P.15,000, were requisitioned. And in Cagayan several canals were dredged and cleared.

As to dredging, it may be said that due to the lack of equipment, it was not possible for the bureau to comply with every request for dredging, having reclamation and harbor improvements in view. But efforts were made to accomplish as much as possible with the available equipment at hand, with the result that the dredging operations during the year registered 1,124,976.50 cubic meters of materials dredged.

Port and River Development

Chinwangtao Activities

THE net value of the trade of the port of Chinwangtao for 1920 was Hk. Tls. 17,180,516, an advance of Hk. Tls. 1,480,076 over the figures for 1919. The famine, happily, has not visited this district, though the drought during the first six months of the year reduced the crops by about one-third and also affected their quality. Coal shows a steady increase, and its value—Hk. Tls. 10,413,239—contributed 60.6 per cent. of the whole trade of the year. The present output of the Kailan Mining Administration is 14,500 tons of coal a day, and during the year amounted to four million tons. The labor employed consists of 15,000 men on underground and 7,000 on surface work. 3,000 coolies are continuously employed in steamer loading and are capable of loading as much as 12,000 tons a day of 24 hours. The present known deposits of coal, to a depth of 3,000 feet, is estimated at 1,000,000,000 tons, while the aggregate length of underground tramways for the haulage of coal is 300 miles. Other products of the company consist of firebricks, fireclay, clinker bricks, glazed tiles, and stoneware piping. The production of anthracite coal at the Liukiang mine is progressing, and the grade known as "special nuts," which is said to compare very favorably with Cardiff coal, is all being exported to England, in spite of the high freights still ruling. In the vicinity of Liukiang three more anthracite coal mines are now working under foreign methods, and there is talk of one of them coming under foreign ownership in the near future. Coal yards have been extended and new railway sidings laid down, while the main railway tracks to the breakwater are being improved by replacing the old 60-lb. rails with heavy 80-lb. rails. Dredging of the harbor has been maintained, and a new grab dredger, in course of construction, will probably start work in the coming spring. The development of Hulutao will not affect the export trade of this port, but imports for the Manchurian marts and inland places along the railway line will probably be affected. Again the opening of the projected ice-free port at Tatsinghokow, some 40 miles down the coast and in close proximity to the Kailan mines, will probably divert part of the coal traffic from this port, as it is estimated that coal sent in that direction will make a saving of 30 cents per ton. Chinwangtao, however, is destined to become an important industrial centre, and if the contemplated construction of the road, linking this place with Tungchow, near Peking, materialises, it cannot but add importance to this port.

Chihli River Improvement

It was mentioned in the 1919 trade report that the arrangement of intermittent grants to the conservancy board was very unsatisfactory, and a hope was expressed that the position in this respect would be stabilised. It is therefore satisfactory to mention that the financial position of the commission has been considerably improved by the guarantee of a monthly grant of Tls. 30,000, which is sufficient to cover its ordinary recurring expenditure. The arrangement took effect from May, when, with the consent of the diplomatic body, the commission made a loan (repayable by monthly instalments of $100,000 from April 1921) to the Chinese government of $1,000,000 out of certain allocated funds which were lying idle pending the sanction of various definite schemes of improvement. Survey work was to some extent hampered by the local disturbances of the summer, as survey parties had to be recalled from the field early in July and were unable to recommence work till the beginning of September. The year was also disappointing as regards the collection of hydrometric data, the rivers throughout the year being extremely low owing to the very scanty rainfall. The surveys of the rivers to the northward of Tientsin were, however, completed, and a topographic survey of the country lying between the Yungtingho and Peiho was approaching completion. Towards the south, river surveys of the Weiho, Tangho, Shaho and Tzeho were completed, in addition to topographical surveys of several localities. The total area surveyed during the year amounted to 11,419 square kilometres. As regards the actual construction of works, two schemes of a flood-protective nature were put in hand, viz., the outer Tientsin south dike and the Machang canal escape channel. In the former case the construction and cost of the earthwork was undertaken by a syndicate of local gentry, the commission on its part being responsible for the necessary masonry works. The railway embankment, which can be made to serve as an effective dike in continuation of the new portion of dike now constructed, still requires to have its formation level heightened, and negotiations to effect this are in hand with the railway authorities. The new outlet channel for the Machang canal was commenced in October, and about 75 per cent. of the total earthwork was completed before winter set in. The remainder of the earthwork and the construction of head sluices will be put in hand in the spring. The reversion of the Peiho still hangs fire. Mr. F. C. Rose submitted, in September, proposals worked out in detail, in which the reversion was estimated to cost, approximately, $5,000,000. There is, however, considerable local opposition to the scheme, and it appears unlikely that sufficient funds to finance it will be forthcoming, even if the opposition were overcome. It is for consideration whether it would not be advisable to concentrate on the diversion of the Yungtingho, a river which is a real menace to the country and to the port of Tientsin in particular. The reversion of the Peiho cannot remove the danger of the Yungtingho: the most it can do is to bring matters where they were before the Peiho diverted itself into the Chienkanho. The successful diversion of the Yungtingho by means of a separate outlet to the sea would, on the other hand, remove the menace of the port being rendered inefficient by heavy silt deposits. The commission hope to be able to formulate definite proposals during the summer of 1921; and if these find general approval, energetic action should be taken to procure an allotment of funds sufficient to carry out the work within a reasonable period.—*Reports from the Chinese Maritime Customs.*

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, JUNE, 1921.

AT a dinner tendered to Mr. Thomas W. Lamont at the Tokyo Bankers' Club on May 11, 1920, he stated in his address that before his departure from America for the Far East he and Ambassador Morris had received assurances from the Japanese banking group and leading members of the cabinet that Japan would withdraw her reservation regarding Manchuria and Mongolia. In the reports of this speech published in American newspapers, this assurance was mentioned as being the direct cause of his visit to Tokyo in order to conclude upon the ground the long drawn out negotiations. In our Special Consortium Supplement, we gave the credit for this entirely to Mr. Junnosuke Inouye, the governor of the Bank of Japan, and recognized leader of the Japanese banking interests, stating that he personally had telegraphed to Mr. Lamont that Japan would enter the consortium. As a matter of fact, Mr. Inouye never came in contact with Mr. Lamont before his visit to Japan, either personally or in correspondence, so the assurance received by Mr. Lamont that Japan would enter the consortium came through other channels.

* * *

THEN WHY HARASS JAPAN?

> **No consortium group may prevent a loan by other groups or even by one group willing to make it by themselves or alone.**

"THE consortium agreement contemplates that no one of its groups and no combination of its groups less than all, will make long term loans to China or to a Chinese province on bonds to be sold in foreign countries, without first giving all the other consortium banks an opportunity to participate in the loan in the equal proportions provided for in the consortium agreement. This is obviously necessary to any plan which provides for international banking co-operation in loans to China in the place of international banking competition. On the other hand, if any one or more of the groups should not desire to participate in a proposed loan, and one or more should be willing to make it, there is nothing in the consortium agreement to hinder. In other words, no consortium group may prevent a loan by other groups or even by one group willing to make it by themselves or alone."

This explanation of the consortium agreement was given by Mr. Frederick W. Stevens, the representative of the American group, in a talk before the American chamber of commerce at Tientsin on April 22.

It is only necessary to recall that Japan was willing to pool her Taonan-Jehol project in the consortium, but requested as a special consideration based on strategical reasons, that this line be speedily financed, and, if the other groups were unwilling to participate, she be permitted to undertake the task single-handed. The consortium tempest simmered down to this one question. Now Mr. Thomas W. Lamont, the head of the consortium, told us in an official history of the negotiations published over his signature in the American papers of August 8, 1920, that the opposition to Japan's request for reserving Manchuria and Mongolia from the scope of the consortium was not because the western groups had any particular plans for developing the provinces in question, nor were they specially desirous of making investments there, but because they could not assent to being excluded from those regions.

The question arises, if Japan desires to proceed with the construction of the Taonan-Jehol line on the grounds that it is essential to her economic and strategic safety, will she be permitted to tackle the job single-handed, or will the other members of the consortium take up their participation, and accept the implied responsibility of preserving the neutrality of the Inner Mongolian strip menaced by an invasion from the direction of Urga ? If Japan is willing to undertake the work single-handed and there is nothing in the consortium agreement to hinder (if the others decline to participate), then it simply remains for her to notify the other groups that she is prepared to proceed with the construction of the Taonan-Jehol line and invite them to participate. If they decline, there is nothing in the consortium agreement that will hinder her from going it alone.

Japan has been inviting Americans to co-operate with her in the development of Manchuria, and as evidence of good faith has purchased $75,000,000 of American materials for her enterprises in that region, and is now at this moment spending $20,000,000 in America and planning to spend $200,000,000 in the next four years. The South Manchuria Railway is to be double tracked from Mukden to Changchun, the lines from Kirin to the sea, from Chenchiatun to Taonan, and from Taonan to Changchun completed, and many industries expanded and created. Japan says in effect to America, "come and co-operate with me in developing these territories. If you believe that I am bent on aggression in China, the partnership so formed is the best assurance to China and the world, that our activities will be along purely legitimate lines." If Americans refuse to take Japan at her word, and she is at liberty to tackle the job single handed, it seems childish and futile to continue to place obstacles in her path.

* * *

China's Own Railway Program

IN another article we invited attention to the stimulus given to the establishment of new Chinese banking institutions through the disinclination of the consortium to advance funds to the Peking government. From its conception, the consortium has declined to consider the railway problems of China from China's own viewpoint, and as a result, China has set herself firmly against any scheme of internationalization and seems determined to oppose the settlement of any outstanding question which fails to unqualifiedly recognize her full sovereign rights.

There are undoubtedly many ways whereby China can escape doing business with the consortium in the construction of new railways, and circumvent the monopoly of foreign government support to national banking groups. It is not necessary for China to continue to adhere to her old program of nationalizing all railways under the direct control or supervision of the ministry of communications. She can throw the field open and permit Chinese companies or the provinces and municipalities to raise capital for these enterprises, an operation facilitated by the creation of many new banks, whose guarantee, in some cases, is sufficient security for foreigners to lend money upon. As the consortium is not a monopoly and the field being open for the financing of these so-called industrial enterprises, there are many ways whereby the guarantee of the government can be extended to them, without coming in conflict with the aims of the consortium.

Signs are not wanting that the ministry of communications and its advisers have been burning the midnight oil devising plans for the building of railways without calling upon the consortium,

and has drawn up a construction program which foreigners will do well to study. The salient features provide, that :

A. Construction of branches or feeders to existing trunk lines will be open to private enterprise on the following conditions : (1) work must be completed within the contract or specified time; (2) branch lines exceeding a certain mileage can remain under the management of private constructors subject to the regulations governing the operations of private railways ; (3) short branches or feeders so constructed will be leased and operated on behalf of private companies by the management of the trunk line which it feeds; (4) favorable operating contracts covering freight and passenger tariffs, etc., will be entered into between the government and private companies.

B. These private enterprises will be encouraged by: (1) subsidies ; (2) reduction of exemption from freight charges for transporting supplies on government lines for a period of years ; (3) rewards to large investors ; (4) guarantee of interest.

C. The public will be invited to subscribe to shares in the existing trunk lines to the extent of 20 per cent. of their capitalization, and interest on the investment will be guaranteed at the same rate as the Peking-Hankow Redemption Loan Bonds (five per cent). If the above measures cannot be carried out some other plan will be adopted.

D. Building railways by construction companies will be encouraged under the following conditions : Railways will be built under a lump sum contract for a complete section or on an item cost basis. The contractors will not be allowed to interfere in the management of the railways so built, and must hand over to the government each section as completed within the time limit specified in the contract ; the cost of the work to be gaid for in annual installments commencing with the sixth year after the date of completion.

E. Bonds for construction will be issued either by existing lines or projected lines and sold through Chinese or foreign banks on substantial securities guaranteed by the surplus revenues of existing railways.

In other words, the minister of communications will attempt to put into practice for the benefit of China certain ideas advanced by foreign bankers as an irreducible minimum for future loan terms. When the above program is studied in connection with the article on the Chinese Banking Group, the facts disclosed must give pause for serious thought. It becomes clearer every day that Peking intends to do everything possible to encourage native investors to come to the rescue of the country. That the Chinese government is now willing to admit domestic investors into a twenty per cent. participation in the capital and earnings of existing lines, in order to obtain the funds to carry out its program, indicates that a strong inducement will be held out to the moneyed interests of the country to come forward and finance its industrial development. If millionaire tuchuns and other officials into whose coffers have poured the wealth of the nation for the past eight years, can be induced to invest it in building profitable railways, instead of buying property in treaty ports and shares in foreign companies and enterprises, China may be able to develop her transportation system without foreign assistance. There is reason to believe that this invitation to invest in patriotic enterprises comes as a direct answer to the campaign waged for over a year to coax native capital into sino-foreign enterprises free from foreign taxation, and, by reason of their nationality, exempt also from Chinese taxes.

The last report of the ministry of communications shows that the valuation of the combined railway properties under its direct control, is $511,000,000, in which the government equity is $174,-000,000, and the non-government or foreign equity, $336,000,000 (silver). It has been very emphatically impressed upon the Chinese that in order to obtain a large foreign loan for railway construction at a reasonable rate of interest, it may be necessary to give some additional inducement to the bond purchaser in the way of participation in the profits of the lines, or an inducement equivalent to that conceded to the Siems, Carey Company, or, twenty per cent. With the ruling rates of interest prevailing in America and Europe, it is no wonder that in their present desperate financial situation, the Chinese authorities are willing to concede their own people a twenty per cent. participation in the capital and profits of their railways in order to raise the funds to proceed with construction. Such participation, if based upon the full valuation of the railways in operation, say $500,000,000, would amount to $125,000,000. As long as these bonds are sold in the country, there seems to be no good reason why the foreign banks who furnished the original capital should object, especially as many of these railway loans are secured, not on the physical property and earnings of the lines, but by specific provincial and other revenues. With flotation profits to native banks, and a low price, such an issue or series of issues, should net the railway department the comfortable sum of $100,-000,000 with which to carry out its program. The native investor is guaranteed a five per cent. interest on his money, with the possibility of earning as high as 15 per cent. The surplus of all the government railways for the last official year was $36,000,000, so it would seem that the investor would be amply secured as to his five per cent. guarantee, even if tuchuns and war-lords do occasionally bang their fist on the table of the railway minister and command him to "fork over" the cash in the till.*

It is perhaps too early to hazard an opinion on the future of the plan. On its face, it was designed to foil the consortium, and in the matter of using the surplus profits of the existing lines as a fund to guarantee future construction loan issues by Chinese companies, financed by Chinese banks, it deprives the consortium of a valuable asset declared by at least one of the official groups to be indispensable to the carrying out of any comprehensive railway plan involving foreign loans. With twenty per cent. participation in the profits of these lines, a fair rate of interest, a low enough issue price, coupled with the profits from construction and the supply of materials, there is every inducement for the new Chinese banks in their heyday of prosperity, to demonstrate their patriotism and business usefulness. The large profits held out to any Chinese construction company that will finance and build a short branch or feeder, should prove attractive to the merchants of cities and towns adjacent to the main lines, and divert the expected flow of Chinese capital into tax-emptied foreign enterprises to purely national undertakings. Here the tables are turned, and Chinese companies operating under a guarantee of their own government, offering great profits with the extra inducement of furnishing the materials may attract foreign capital to subscribe to sufficient shares in these concerns to ensure their success.

The inducement held out to foreign firms to purchase shares in these Chinese construction companies in return for an assurance that the materials will be purchased through their agency, may prove too seductive to ignore in these days of strenuous international competition. If the plan works, and the Chinese banks get behind their construction companies, the foreign firm may either have to participate or face the possibility of seeing orders for materials placed over his head in Europe and America by Chinese purchasing agents, as has already occurred in several choice contracts.

Conditions are changing in China. The Chinese banks have outgrown their old pawn-broking days and many are now in a most prosperous condition. There is immense wealth in the country. If the tuchuns and officials can be induced to combine their hoardings with the merchants, to finance these immensely profitable undertakings, there will come a revolution in the ways of doing business in this country.

There may be other ways than through the consortium for foreign manufacturers to sell railway materials to the Chinese. At any rate, if the astute Mr. Yeh's plan succeeds, and his successor obtains the full confidence of the native banks and the moneyed tuchuns, there will have to be something beside pure altruism as a talking point in obtaining the much advertised railway supply business in China. The plan holds possibilities that should make the foreign banker, machinery manufacturer and agent do some tall thinking.

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*See Editorial on China's Railway Finances.

China's Railway Finances

THE statistics of the Chinese government railways for the year ending December 31, 1919, showed a surplus of $36,478,281 after all net income debits had been paid. The Chinese government bureau of economic information, which seems to be the official mouthpiece for the dissemination of this and other interesting information, reports that for the year 1920, the "Free Surplus" (obtained, according to the bureau, after deducting the amounts appropriated for additions and improvements, retirement of funded debt, bondholder's share of profits, etc., from the net surplus of the various lines) was $19,324,765. After the above explanation it goes on to show how this "Free Surplus" is expended, and gives the following itemization:—

Item	*Disbursement*	*Free (or available) Surplus*
Free Surplus		19,324,765
Remittances to Government:—		
Payments of Principal and Interest of Railway Loans	3,000,000	
Payments of Railway Engineering Works ...	2,300,000	
Payments of Principal of Domestic and Foreign Loans	12,600,000	
Payments of Interest of Domestic and Foreign Loans	2,700,000	
To cover Losses of Peking notes collected at the four stations in Fengtien	420,000	
Expenses of Tongshan Railway College	90,000	
Transfer of Rentals of Postal Cars	200,000	
Transfer of Through Traffic Accounts	270,000	
	21,580,000	
Transfer of Accounts of Military Transportation ...	2,450,000	
	24,030,000	19,324,765
Free Surplus	19,324,765	
Total Deficit	4,705,235	

We confess to be somewhat puzzled to understand the explanation of a "Free Surplus" which goes on to show that it is no surplus at all. On the same date, however, the report of Minister Yeh Kung-cho covering the conditions of the ministry was made public, and from this we glean the following enlightening information. It would appear from this report that the Chiaotungpu has been carrying the entire load of financing the Peking government, in addition to other very interesting enterprises which run into high figures. The school budget, the expedition for the relief of Urga, the parliamentary elections and sundry other mooted measures calling for heavy expenditures all seemed to hinge on the ability of the railway board to provide the funds.

Mr. Chang *Chi-tan*
New Minister of Communications

It seems that the Bank of Communications raised the modest sum of $20,000,000 since last September as its contribution to keeping the government alive, in addition to paying off various obligations that fell due. The ministry also took upon its shoulders the task of providing $220,000 per month for the ministry of education, $500,000 a month to the endowment fund for retiring domestic loan bonds, and paid the expenses of the bureau of economic information, which calls for the modest sum of $480,000 a year, as good as a ministry nowadays. In addition, the Chiaotungpu has handed over to the ministry of finance in the past eight months over $3,000,000 in cash and domestic bonds, and taken upon its shoulders the construction of the Hukwang railway, which calls for a continuous expenditure of $160,000 monthly in order to avoid further suspension of work.

A British loan of $7,000,000 was raised to double track the Peking-Mukden line from Chinwangtao to Shanhaikwan, and construction of the Chinchow-Chowyang branch of the same railway will call for $5,000,000, spread over several years. A university of communications will cost more than $360,000. From March to December of this year the ministry will be called upon to pay out $9,450,000 on interest and amortization of old railway loans, $11,080,000 on domestic debts and other amounts which bring the total up to $35,390,000, while the amount of funds that it expects to receive during the balance of the year is only $14,600,000 of which $10,000,000 is represented by the surplus earnings of the railways and the balance apparently from the posts and telegraphs.

Minister Yeh was of the opinion that he had done as much as was humanly possible to aid the government in its hour of financial stringency, and if his railway program could be carried out, which contemplates letting in the public to a twenty per cent. interest in the existing lines, he would probably have brought another goodly sum into the war chest.

* * *

The Federal Wireless Contract

WE have repeatedly deplored the fact that scheming Chinese officials have foisted off on American financiers, contracts and concessions, which, politically speaking, were loaded with dynamite. Starting with the Manchurian Bank and Chinchow-Aigun contracts down the line through the Currency Reform Loan, the Siems-Carey Canal and Railway contracts, the Continental and Commercial Bank loan to the recent Federal wireless deal, it is the same old story, an apparent determination to compel America to give effect to its conception of the Open Door by pitting us against the other Powers, especially Japan. It was all well enough as a game of wits and diplomacy, this we enjoyed, but when we became convinced, as we did, that such practices were quietly driving us into a position where a "show-down" seemed inevitable, and at a time when the nation was woefully unprepared to enforce its policies, we refused to further support the Chinese in these dangerous tactics.

For as nasty a mess as has ever been brewed in China let us probe into the unsavory story of the wireless deal, and to escape the accusation of bias, we will take the salient features from the *Peking & Tientsin Times*, which cannot be accused of harboring any friendly sentiments towards Japan.

"The summary of the correspondence that has passed between the Japanese and American governments, in regard to the Federal Wireless Loan, is not easy to understand without reference to the contracts referred to especially the agreement concluded between the Ministry of the Navy at Peking and the Mitsui Company, in February 1918. It may be recalled that soon after China had declared war against the Central Powers it was discovered that the Minister for the Navy, Admiral Liu Kuanhsiung, was in negotiation with a Danish agent, acting on behalf of German interests, for the installation of German wireless plants in China. The Allied Ministers protested against this utterly shameless transaction, and the Mitsui Company then stepped in, and concluded an agreement with the Minister of the Navy for the erection of a highpower wireless station on a site approved by the Chinese government, at an estimated cost of £536,267. This amount was to be advanced to the Chinese government and repaid in thirty equal annual instalments, interest at the rate of eight per cent. per annum also being paid on the amount outstanding each year. The contractors were to have sole control of the installation during the period of the loan, unless the Chinese government repaid

the entire amount before the expiration of the thirty years, and the Chinese government was to receive a royalty of ten per cent. on the receipts of the installation. In a supplementary note, the contractors undertook to respect the terms of the agreements entered into between the Chinese government and the Great Northern and Eastern Extension Telegraph Companies, debarring any other land telegraph station from communicating with Europe or America previous to 1930. Finally, on March 5, 1918 a Declaration was signed under which the Chinese government pledged itself that for the term of thirty years no other party should be allowed to erect a similar wireless telegraph station, for communicating telegraphically with Japan, Europe, and America, nor might the Chinese government itself erect any other wireless installation for this purpose.

The effect of this agreement, then, was to give the Japanese contractors a monopoly of long-distance wireless communication for a period of thirty years, within the territories of the Chinese Republic. And it may be noted in passing that it was somewhat curious that the power to dispose of this monopoly shculd be in the hands, not of the Ministry of Communications, but of a Minister for the Navy whose conduct was already suspect to the Allies. Further, the Japanese have, as far as we are aware, contributed nothing to the development of long-distance wireless telegraphy most of the important patents for which are held, throughout the world, by Marconi interests. This point is important, because in May 1919 a contract was signed between the Ministry of War and Marconi's Wireless Telegraph Company, providing for the establishment of a Chinese National Wireless Telegraph Company, in which the Chinese government was to acquire a half interest, and which was to have the exclusive right in China, for a period of twenty years, to all Marconi patents. The object of this Company was to enable China herself to manufacture the apparatus necessary for the development of her wireless communications, and the government bound itself, when the goods supplied by the Chinese National Wireless Telegraph Company were not lower in quality, or higher in price, than those offered by other companies, to purchase exclusively from the Chinese Company all its present and future requirements in wireless telegraph and telephone apparatus.

So much for the Mitsui and Marconi contracts, the first of which aimed at a monopoly under Japanese control, the second at creating a national wireless factory, capable of supplying all China's needs, within the territory of the Republic. The Mitsui Station is being constructed at Shungchiao, between Peking and Tungchow; the national Chinese wireless factory is, we understand, being erected at Shanghai.

On January 6, last, a contrat was signed between the Minister of Communications, and the agent of the Federal Wireless Telephone and Telegraph Company of America, for a loan of Gold $4,600,000 for the erection of a longdistance wireless station capable of communicating direct with the United States, at Shanghai, and smaller stations at Harbin, Peking, Canton and Hankow. The American Company is given the privilege of operating these stations for a term of ten years, paying a royalty of one per cent. on its gross revenues to the Chinese government, and the loan is to be redeemed in ten equal annual instalments. On the face of it this contract infringes the Mitsui agreement of February 21, 1918, and the restrictive contracts recognized therein, which the Chinese government had previously concluded with the Great Northern and Eastern Extension Cable Companies. It also violates the contract with the Marconi Company for the establishment of the Chinese National Wireless Telegraph Company. But the American government, has decided to give the Federal Wireless Company its full support, and has notified the Chinese government that repudiation of this contract will be regarded as an unfriendly act.

So we have the following amazing situation: the *Ministry of the Navy* has granted a thirty year monopoly of long-distance wireless communication to a Japanese concern, which is to operate the Shungchiao station for that period; the *Ministry of War* has pledged the government to purchase all its wireless supplies for a term of twenty years from a Company in which the government has a half interest, and which enjoys the exclusive right to all Marconi patents in China for that period; the *ministry of communications*, ignoring both these contracts has arranged with the Federal Wireless Company to erect one long-distance and four medium power stations in China, and conceded to the Company the right to operate them for a term of ten years. Doubtless we shall learn in due course that the Ministry of Interior, the Ministry of Agriculture and Commerce, and the Cabinet Secretariat have all entered into wireless agreements which conflict with those already concluded. And then the Super-Tuchuns may follow suit. . .

On the other hand there could be nothing reprehensible in an American Company competing for a share of Chinese government business on the basis of better quality and lower prices, if nothing in the nature of squeeze was paid to the Chinese officials concerned. The fault for the whole of the present muddle rests chiefly with the Chinese government, which has behaved outrageously over the whole business. It is obviously out of the question for the Minister of Communications to plead that contracts entered into by the Ministers of the Navy and of War, respectively, in the name of the government, could be treated as mere scraps of paper by his own Ministry. For a long time it has been the common belief in Europe that the word of a Chinese is as good as his bond. In the case of the Chinese government there have been repeated proofs that its word is absolutely worthless. Valuable consideration was given both for the Mitsui and the Marconi contracts, and deplorable though the terms of the former were, and indefensible in the case of Powers claiming the right by Treaty to "most favoured nation treatment' it is preposterous that both these contracts should be calmly violated without any negotiation with, or explanation to, the parties interested. The Chinese government has been guilty of a gross breach of faith, and it is singularly unfortunate that the American State Department should find itself in a position where it deems it desirable to uphold that government in violating previous obligations. Is it, we wonder, quite satisfied that in so doing it is really standing for the "open door" principle, rather than the private interests of the minister of communications ?———"

Just so. Is it the Open Door doctrine that is worrying the Chinese officials, or the private interests of the old Chiaotung clique who have twice before ignored their contracts with other Powers, in order to pit the United States against Japan. The state department had no option other than to protest and stand upon the treaties which prohibit the creation of monopolies. Obviously, America will always be in hot water and at loggerheads with the other Powers under such conditions, for it is impossible, even by taking up arms, to defend an Open Door policy when the beneficiary of that policy is forever closing the Door in our faces.

* * *

Japan and the League of Nations

To be an advocate for, or to pit one's self against, the League of Nations, is to take part in a movement destined sooner or later to bring the nations of the world into a solid, homogeneous brotherhood. Whether this brotherhood will perform a better duty to mankind than will the detached individualism of to-day it is not the purpose of this article to conjecture. In passing, it will not be remiss to remember the brothers Cain and Abel, and, in fairness to the supporters of the contention that these two brothers are the exception to an otherwise unbreakable relationship, the brothers . . . their names have flown for the nonce.

It seems that the opposers to the league do but stir a greater enthusiasm in the make up of *les advocates* for it is not difficult to see the great movement surmounting obstacle after obstacle, all of them necessary in the evolution of any imperfect vortex, shaping it, smoothing, planeing and even gougeing where this drastic measure commands application. In Japan are its promoters no less active than they are in the other countries of the world. Whether the movement comes under the name of League of Nations or any other appellation it does not matter. Each one is a means to an end and the end is co-operation, not separation. Little is known of the movement in Japan but now comes a booklet entitled "League of Nations Association of Japan" in which one can read of an activity which is not only enlightening but inspiring. Such prominent gentlemen as Prince Tokugawa, Viscount Shibusawa, Baron Sakatani, Dr. J. Soyeda and Mr. J. Inouye are the officers of the association who have with them, acting as the executive committee, such well-known leaders in Japan as Count Yoshii, Dr. K. Hayashi, Dr. S. Hozumi, Dr. M. Oka, Dr. M. Yamakawa, Dr. M. Anesaki, Mr. D. Tagawa, Mr. S. Akizuki and Mr. T. Miyaoka. The principal articles of the rules follow :

Article 3.—The association shall have for its object the carrying into practical effect of the spirit of the League of Nations.

Article 4.—The association shall undertake the following activities with a view to the realization of its object :—

(*a*) The organization of research and discussion upon matters relating to the League of Nations.

(*b*) The holding of public meetings and the publication of literature.

(*c*) The maintenance of relations with other organizations, whether foreign or Japanese, having a similar object to that of this association.

(*d*) The sending of delegates to the International Congress of the League of Nations Associations.

(*e*) Any other work deemed proper by the executive committee.

Article 5.—Members shall all be Japanese subjects who, in general acceptance of the aims and purposes of the associa-

tion, signify their desire to join it on the recommendation of two or more of its members.

There are other articles, but these are perhaps sufficient to outline the work contemplated by the organization. Supporters of the League of Nations movement will welcome this new organization with great acclaim and a perusal of the booklet which is published by the association from Uchiyamashita-cho, 1-1 Kojimachi, Tokyo, will show very clearly the sincerity of the movement actuated by the wholehearted support of the nation's greatest servants.

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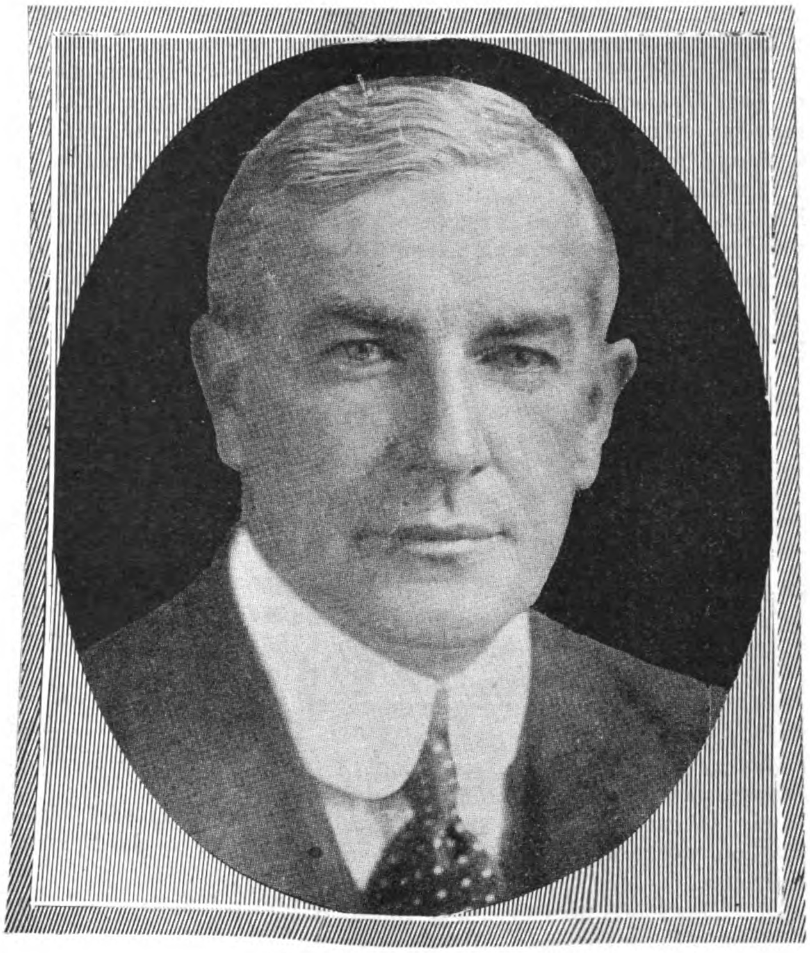
The American Under Secretary of State

IT was not difficult for President Harding to find an able and experienced assistant secretary of state from the ranks of the Republican party. That he should have selected from this array of talent the man probably best equipped for he post is, however, a matter of congratulation to the nation. In the appointment of Mr. Henry P. Fletcher to assist Mr. Hughes, the state department



Mr. Henry P. Fletcher
American Assistant Seretary of State

will benefit, and we can expect that once more it will take its place as the most important branch of the government, instead of being, as it has for the past eight years, the puppet of the executive office. Few indeed are the active American diplomats with a wider and more intimate knowledge of problems that confront the nation in the Pacific than the energetic ambassador elevated to this high office. His record in China as chargé d'affaires stands unequalled by any American minister to this country. The fight which brought the American Group into the Hukwang Loan, and paved the way for international co-operation in China was borne and won by Mr. Flecther whose official support and constant advice enabled his friend and associate, Mr. Willard Straight, to win his point. In the game of wits with the older and more experienced European diplomats and financiers, the young American chargé proved himself their equal. It was a great loss to American interests in the Far East when he was ordered to Chili. Fortunately, his place was taken by an older and abler man, Mr. W. C. Calhoun, the highest type of international lawyer our country has produced. With the passing of Fletcher and Calhoun, American diplomacy in Peking has been more influenced by sentiment than by the facts of the situation.

With a return to reason and a realization of our international duties and obligations, the conduct of our Far Eastern diplomacy is certain to take a new course. The earnest desire of President Harding is to promote friendly relations between America and Japan, and it can be taken for granted that the same policy will dictate the conduct of the state department. With proper co-ordination and team work between the executive, the state department and the representatives of the government abroad, the nation will no longer be treated to the spectacle of Washington expounding one policy to the people at home while its representative on the other side of the Pacific is placing his own interpretation on it, and creating issues that make for war.

Mr. Fletcher's experience as ambassador to Chili and Mexico in addition to his strenuous work in Peking makes him one of the foremost American experts in the problems that confront the nation in the Pacific. That the President has selected him for the post of assistant secretary of state is simply a testimonial to his powers of good judgment, a fitting recognition and recompense for some of the trials the young ambassador has passed through in the past few years in trying to defend American rights in Mexico in the face of a set policy to let matters drift.

* * *

The British Engineers' Association

MODESTY is a characteristic of the average Briton. Especially does this hold true with the British engineer and machinery manufacturer, whose products in the past have found their place throughout the world, without undue advertising or publicity, largely on their intrinsic merits and to the personal activities of energetic agents. Where other machinery manufacturers have expanded their business through judicious advertising and descriptive matter furnished to the technical press, it has been most difficult, if not impossible, to move the British manufacturer to adopt the same practice. As a result, other nations have found markets for their machinery even in spheres dominated exclusively by British interests. Conditions, however, are changing.

For six heartbreaking years, the vast machine shops of Great Britain were turned into munitions factories, and it was in this time that the British engineer saw his foreign trade and connections sacrificed in order that he might give his all to save the empire.

The armistice came and the world rushed to place its orders for machinery and equipment, but again the British were handicapped, this time being unable to quote deliveries until their plants were re-equipped for peace purposes. Two years have passed and gone. Little by little the British are coming back. Their agents, experts and engineers are in the field, ready to quote prices, make deliveries, and buckle down to the hard work of regaining their lost position. They are making good. No honest or honorable ally having in mind what they have gone through will begrudge them success.

The British Engineers' Association, whose activities were crippled during the war, has been reorganized under a new directorate

and new program and is now prepared to win back its lost position. We have received its Official Directory of Members. Its preface indicates that the old policy of hiding their light under a bushel may be abandoned. Mr. D. A. Bremmer, one of the association directors, after inviting attention to many great British achievements in the realm of mechanical engineering, concludes as follows :

"The note struck in this article may sound a little strange to a world accustomed to British modesty and even self-depreciation. It is just as well that the new note should be struck without delay. In the past, the British engineer has been too prone to hide his light under the bushel, too unwilling to cry his wares in the market places, and too proud to claim from ungenerous rivals the credit due to his past record and present performance. He has suffered much more from these causes, combined with a seldom appreciated sportsman-like willingness to "give the other chap his full due." In the world of to-day the indulgence of these amiable weaknesses is quite too expensive. It is high time to abandon them, and commence to pursue our business on the assumption that the other man will not know unless you tell him, and will not remember, unless you reiterate often and loudly enough to exercise something akin to hypnotic power of suggestion."

The British engineer is evidently awake and "on the job."

The Official Directory is invaluable to those in foreign countries as a register of high-class engineering firms guaranteed by the association.

* * *

The Largest Purchaser

THE March bulletin of the Park-Union Foreign Banking Corporation says that the business situation in China is still badly clouded by the famine, political uncertainties, exchange conditions and reduced buying by foreign countries. The native bankers, even though reported to have ample funds, are not desirous of granting credits for export activites. There has been, however, a material resumption of silk exports to the United States.

The largest Manchurian purchaser of American products, the South Manchuria Railway Co., proposes to spend more than $200,000,000 gold upon improvements and extensions within the next five years.

* * *

"Pull Together!" Hoover's Slogan

HERBERT Hoover, the new secretary of commerce, declares that the rapidity with which the nation can get out of the economic ditch will depend largely upon the degree to which we pull together. His program is a long one and a wise one.

Hoover promises to live up to his reputation for solid sense and organization ability. In referring to foreign trade he undoubtedly meant that his remarks should cover the Far East. Here of all places in the world, Americans should pull together and co-ordinate their efforts towards building up trade. Trade and politics are bad bed fellows.

* * *

The Ancients and the Peking Tramways

IF China's monarchs of the past have a consciousness that makes of worldly affairs any concern to them, they must be hovering over Peking aflame with indignation and aghast at the effrontery imposed upon the sanctity of the capitol and their personal dignity. Mere man, that worldly individual whose propensity for restlessness makes of the world a generator and perhaps a magnet, has concocted one other scheme to draw the seeker of repose away from his Sylvan-dell; his sunlit, grassy lawn. Did he confine his activities to spheres wherein no princes, soldiers, leaders, masters of art, music and literature, held sway to the satisfaction of a horde of admiring sycophants, then no tempest could reign in the heavenly domains, if such there be. But he does not. He comes with his tall wireless mast and erects it in the sacred Temple of Heaven in Peking. He comes with his modern, many storied building, and erects it in the Tartar city of Peking. He comes with his aeroplane and flies over the sacred of sacreds, the Forbidden City of Peking. He comes with his motor-car to scatter the ancient cart and mule in confusion by the way side . . . and now! He will have those byways and highways of China's sacred city turned into modern thoroughfares on which the clanking tramway will pursue its domineering course. Surely, surely the pink mortar over the tomb of the great Chien-lung becomes cracked with the risings of a disturbed tranquility. One wonders!

History teaches that innovation has always met with a large measure of disfavor. In this age invention is hailed and loudly applauded, but there are those, and they must not be forgotten, who view with misgivings, a march which leads to what others believe is a possible millenium. Perhaps it is these, who, by their opposition, create the impetus which drives towards restless activity. Man's curious mentality spurs him to meet opposition with grim determination. And if this is so, and if the lovers of the great past and those imbued with the spirit of ancestor worship are bringing nearer the haven which all mankind seeks, then their misgivings are worth-while, meritorious. And it may be that instead of writhing and committing contortions in the heavenly ether, China's monarchs of the past look down with a benign complacency, a satisfaction with present time progress, and a wistfulness that no hand can be taken in the movement forward. Perhaps this wistfulness is tempered with a knowledge that their activities in the past have all helped to make possible this progress of the present. And, therefore, the Peking tram car loan may not be looked upon with disfavor if these thoughts which form an attitude are taken into consideration.

Information regarding the project is as follows:

It is authoritatively reported that, on the basis of the five per cent. loan concluded in the second year of the Republic of China between the ministry of finance and the Banque Industrielle de Chine, an agreement consisting of 18 articles has been signed. The following are the main points of the argeement:—

1. The Peking tram-car company shall be established by government and people, each subscribing $2,000,000.
2. All the government shares to be paid for with the five per cent. loan concluded with the Banque Industrielle de Chine.
3. The superintendent of construction to be a Chinese.
4. Chief engineer of construction work to be a Frenchman.
5. A board of directors with six representatives of the public and six of the government, the latter including the manager of the Banque Industrielle de Chine.
6. In case foreigners are employed in connection with construction work, the selection of them to be left to the French concerned.
7. Head of the business office to be a Chinese and the sub-head a Frenchman.
8. Chief accountants shall be a Chinese and a Frenchman.
9. With regard to the purchase of materials, preferential rights shall be accorded to France.
10. Prior to the complete repayment of the five per cent. loan of the second year of the Republic of China, the sale or purchase of the government shares of the present company to be prohibited.

And so. Into the past is woven the present, and the mesh of the present is open for the mesh of the future. Electricity, and all the potency in this great wonder with which the world is yet by no means entirely familiar, may be leading to wonderful progress, making the tramway an object of antiquity deemed perhaps by some of a later generation a sacrilege to replace.

The Mines and Minerals of Yunnan

South China

By *J. COGGIN BROWN, O.B.E., D.Sc., M. Inst. M.M., F.G.S.*
Geological Survey of India

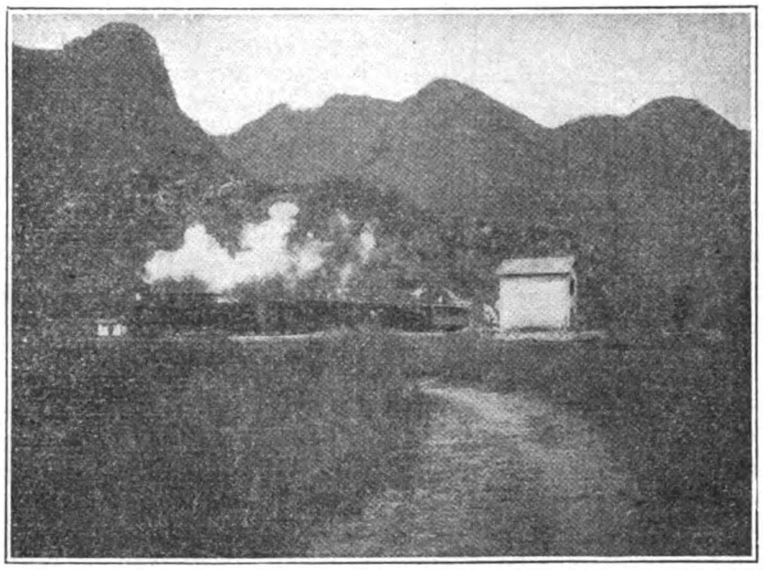
The author gives a description of the mineral resources of Yunnan, the most south-westerly of the Chinese Provinces, adjoining Burma and Tongking

From the Mining Magazine

FUTURE OF COPPER MINING IN YUNNAN.—In my previous article I gave particulars of the known copper deposits of Yunnan, and showed that the output is lower nowadays than it used to be. This decline of copper mining during the last fifty or sixty years is due to a number of causes. Prominent among the internal ones are the following :—

(*a*) Partial exhaustion of rich ores above ground-water level.
(*b*) Political disturbances and strangulation by too strict official control.
(*c*) Destruction of the forests with no attempts at reafforestation, and consequent lack of charcoal in large quantities at the smelting centres at cheap prices.
(*d*) Difficulties of transportation.

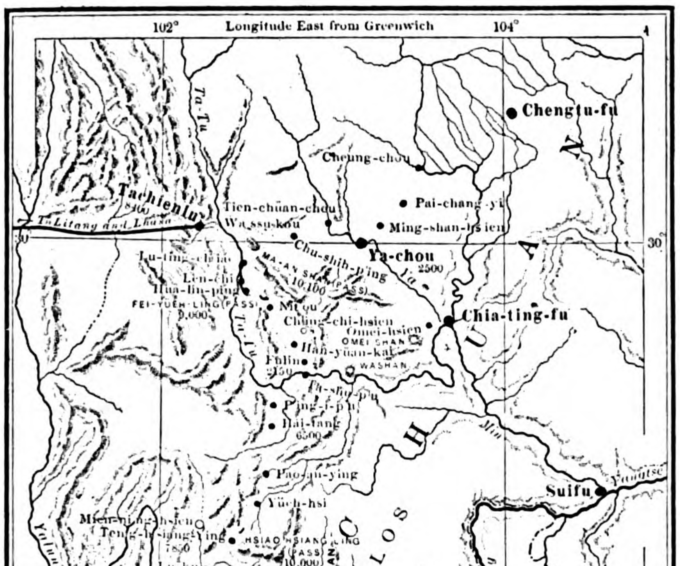
Although I believe that the earlier French writers were to some extent led astray by too complaisant an attitude toward Chinese accounts, and formed too exaggerated an opinion of the copper resources of Yunnan, I do not accept in their entirety the rather gloomy predictions of the engineers who have investigated the question at later dates. It is admitted that there are no important deposits within reasonable distance of the Tongking-Yunnan Fu railway, but it is necessary to look further ahead when other lines will doubtless traverse the country, and open up regions which are now most inaccessible. I do not believe that there are any important deposits unknown to the Chinese, unless they are situated in the remoter parts of Yunnanese Tibet, neither do I think that the lean deposits of small extent will ever lend themselves to exploitation on modern lines. At the same time I am convinced that Yunnan possesses considerable reserves of copper ores, at depths at which indigenous methods have failed to reach them. While it is impossible to point to any particular example, I conclude that the larger deposits in the districts of Tungch'uan Fu, Weining Chou, Yungpei T'ing, and perhaps Linan Fu, Lichiang Fu, and Weihsi T'ing, merit careful individual attention, and that some of them will probably repay the attention which they may receive. The future growth of copper mining and smelting in Yunnan will depend on scientific application of the most recent practice, and this cannot be done either by European or Chinese until better transport facilities are created in most cases, and a more generous attitude is adopted by the administration towards all.



To Parts of Yunnan by Rail

LEAD AND SILVER.—*Although it seems probable that in the past Yunnan has furnished large quantities* of silver from the cupellation of argentiferous lead, to meet the demand in other parts of China, the available information regarding the deposits themselves is meagre. The Chinese exploitation of the Bawdwin mines in the northern Shan states of Upper Burma for silver proves how har afield the old imperial government was once prepared to extend its operations in search of silver. Some idea of the importance of lead and silver mining in Yunnan about the middle of the 18th century can be gleaned from the long list of mines given by Rocher. Leclère in 1898 estimated the annual production of lead in Yunnan at 3,000 tonnes. He did not think that the deposits were important enough to justify expenditure on communications to them. Lodes containing lead ores were not as numerous as copper lodes, and he considered that they are only well developed in certain localities, notably around Kochiu and Weining Chou. In the former locality the lode at Longteotchai was extensive and very regular, though when Deprat wrote in 1911 the workings had been abandoned. It was clear that many of the residues accumulated under the Chinese system would be amenable to European treatment. Lantenois received information regarding an argentiferous lead mine at Pansan, one stage to the north of the Ouaiteouchai mines, where there were estimated to be 10,000 tonnes of lead slags probably worth re-treatment. Duclos remarks on the difficulty of separating lead and zinc mines owing to the constant association of galena and zinc blende in Yunnan. He has given a long list of mines compiled from Chinese sources. Davies has drawn attention to the fact that there is an export trade in lead and zinc as well as copper from Yunnan to the Yangtze valley. Regarding the occurrence of silver he wrote: "The metal is if anything more abundant than copper, and one can seldom travel far in Yunnan without seeing or hearing of silver mines. I doubt if there is any large district in the province which does not produce silver. Many of the mines are well worked and Yunnan supplies much of the silver used in other parts of China."

LEAD MINING IN THE MINGKUAN.—This is the name given to part of the valley of the Nolo Ho, a tributary of the Lungchiang, which is the Shweli of Upper Burma. It lies about 30 miles due north of Têngyüeh, and some 24 miles due east from the Burma frontier in the vicinity of Myitkyina. That the valley has been the centre of a considerable copper and lead-smelting industry in the past is proved by the number of old adits that enter the hills at various places, by the remains of ancient furnaces, and by the slag heaps. I found slag heaps at various places, the largest being at Hsiaohsinkai, Hongtoohai, Kantungpa, and in the valley which forms the pass leading from the latter place to



The Course of the River of the Golden Sands

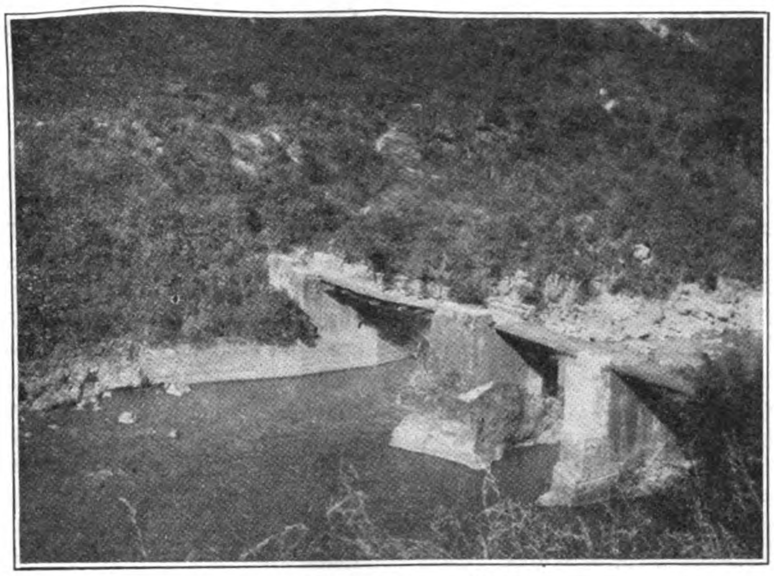
"Richer in Mineral Wealth than any other part of China, and one of the most highly Mineralized spots in the whole world." (Page 395)

Kaitou. There is some reason to suppose that these slags could be re-treated profitably and the large quantities which exist make the Mingkuan worthy of attention. I was told that some of the heaps were 300 years old. I examined ore deposits at Hsingai-chang, Tongshan, and Hongtoohai. At the former, prospecting operations in granite had revealed several promising-looking stringers of oxidized lead ores. At the second, the ore, consisting mainly of galena with some zinc blende, limonite, and oxidized copper ore, occurred as infillings in certain parts of a broken and recemented limestone. Hongtoohai is the name given to a mountain over 6,800-ft. high. There are numerous portals of old tunnels and the remains of broken-down furnaces at its foot. Two levels were being worked, and the ore-body was met with about 120-ft. in from the portal. It was 15-ft. in width at the face, without its limits on either side being visible. A second level, some distance above the first, met the ore-body about 30-ft. in from the portal. Its limits were not visible. On the top of the mountain, over 200-ft. above the level of the lower adit, there is a large outcrop of, presumably, the same ore-body. Adjoining the limestone on its western side, it continued about 20 or 30 yards in breadth to the steep side of the mountain, where it could be seen cropping out some way down. In a north and south direction I traced the outcrop for over 120 yards. The ore consists of iron pyrites with small quantities of pyrrhotite, and smaller amounts of chalcopyrite and galena. There is a large quantity of it available, and I should like to have made a proper examination of the whole occurrence. This I was unable to do. The Chinese miners planned their workings to obtain the largest amount of lead and copper ores. There are several other localities in the Mingkuan where argentiferous lead ores occur, and I consider that this valley, and the surrounding territory, is a field which holds out much promise to the prospector. Samples of galena from Tongshan contained over 156 oz. of silver, and from Hongtoohai over 123 oz. of silver and appreciable traces of gold per ton of lead. A slag from Hsiao-hsinkai contained over 6 per cent. of metal, mainly copper, with a little lead.

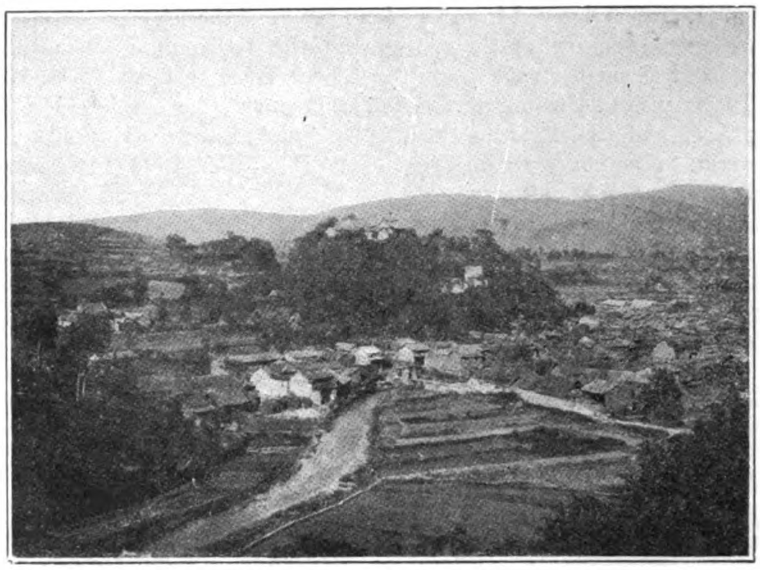
The mining of galena by the Yunnanese is carried on under much the same rules as those adopted for other minerals. The ores are first hand-picked and then crushed by stamps or by hand. After concentration in sluice-boxes they are calcined with charcoal in stalls, and the agglomerated sintered material so produced goes to the blast-furnace. The lead-smelting furnace is from 7- to 9-ft. high, built of brickwork and lined with a refractory material. The shaft is roughly square in section with rounded corners, swelling out into a funnel shape toward the top, from which charging is done. The front is made of a double wall of brickwork which can be pulled out and renewed when necessary. It contains the slag and tapping holes. The cylindrical blower, generally worked by the vertical-axled water wheel, is raised a little above the level of the hearth, so that the tuyere slopes directly down into it. The lead is cast into small pigs and is then sent to the cupellation furnace. This is of hemispherical shape, between 5-ft. and 6-ft. across. The hearth is only slightly concave and has a slope toward the door. There are two doors in the front, the lower one for charging and the upper one for firing. The metal is placed under the fire, which is supported on a grating above it, and is thus heated by radiation from the incandescent charcoal which forms the fuel. Litharge is removed by means of an iron rod. The process is a very tedious one, and the silver has to pass through the hands of a refiner after it comes from the cupellation furnace.

OTHER LEAD LOCALITIES.—Galena was mined on a small scale in the hills at the eastern extremity of the Pupiao valley, Yungch'ang Fu prefecture, from a narrow vein in permo-carboniferous limestone. In Chêngkung Hsien I was shown specimens of ores which were said to come from Yangwanshan, a locality in the hills to the south-west of the city. In Chingtung T'ing I saw galena reported to come from the Changsa region. The two following mines are said to produce silver in the Yungpei T'ing

As the Valleys look from the Railway



An Old Bridge near Siukiaton



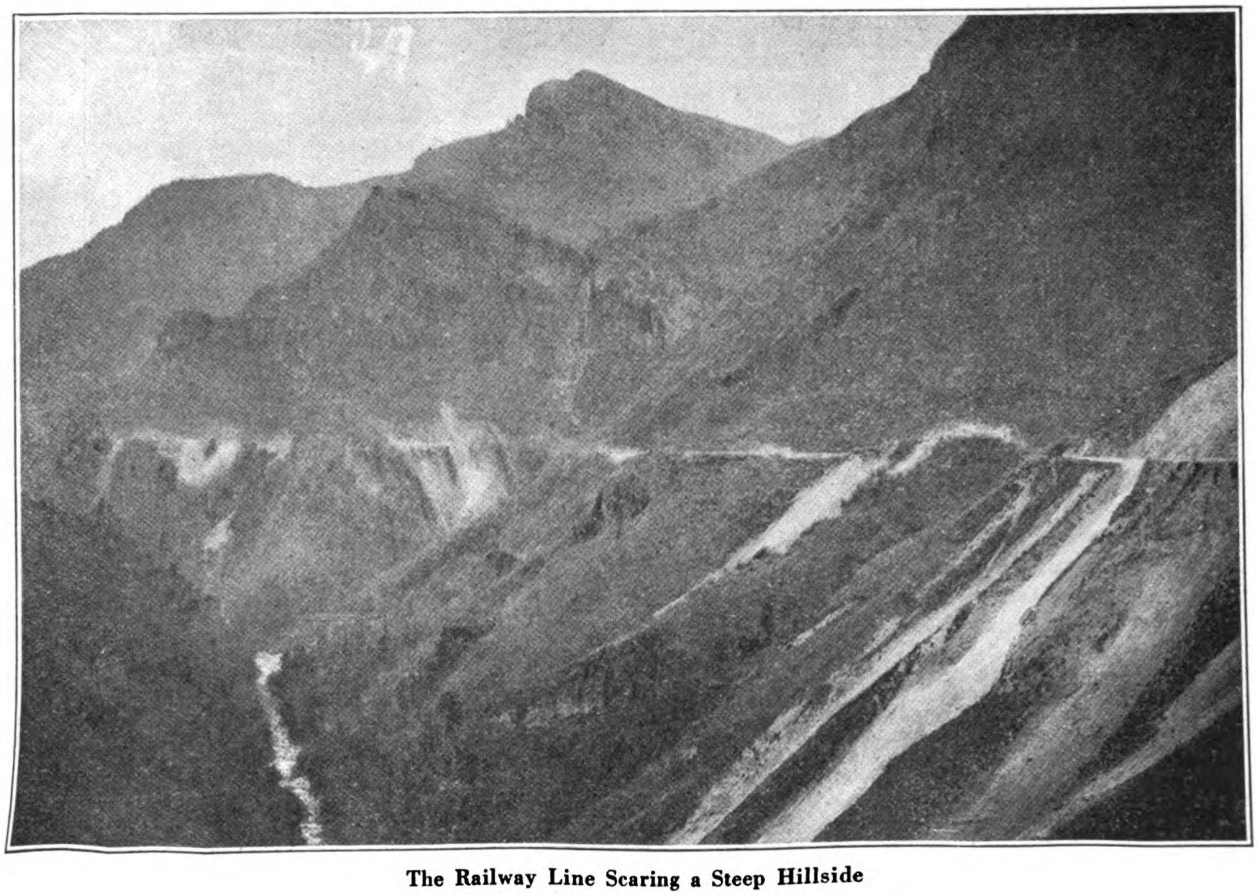
Koputsuen, A Valley Village

district: Peininch'ang and Erhp'ingch'ang. The mine of Lomicha, in the Lichiang Fu prefecture, is said to produce silver. In a side valley at the head of the Monglai plain, passed by the road descending from Pangwa in the Yung Chou district, there is an old lead mine. In the Chinese Shan states of Kengma and Mĕnghsa, on the Kunlon ferry route to Yun Chou, it is said that there are three large lead mines which were abandoned about 100 years ago. Great quantities of slag are said to exist near them, and specimens were shown to me by the Shans. In appearance these slags were indistinguishable from those of Bawdwin. The two mines in Kengma are called Manpiench'ang and Herhshanch'ang. The one in Mĕnghsa is said to be only six *li* from the town of that name.

ZINC.—Zinc blende is an almost invariable associate of galena in Yunnan. The chief use of the metal is as an alloy in the coinage of cash. I have not seen zinc smelting carried on, and as far as I am aware the ores are not reduced in the western or central parts of the province. They are said to be mined and smelted to the north of Huili Chou in Ssuch'uan, but the most important centre is at Weining Chou, just within the borders of Kueichou. Duclos has described the methods adopted.

FUTURE OF LEAD, SILVER AND ZINC MINING.—The fall in the price of silver is held by some authorities to have been the chief reason for the decline of the lead and silver industry in Yunnan. If this be read with the causes I have already advanced in the case of the copper mines, such as the general economic paralysis brought about by the rebellion, the rigorous official control, the exhaustion of easily won surface ores, and the want of an abundant fuel supply, a greater measure of truth is probably arrived at. That modern methods can be successfully applied to ancient Chinese lead mines is proved by the operations of the Burma Corporation, and by the not inconsiderable quantities of mixed lead and zinc sulphides exported before the war from Hunan. The mixed sulphide deposits of the Mingkuan and the reported occurrences in Kengma and Menghsa, are within comparatively short distances of the Burma frontier. Their existence should not be lost sight of in this connection. Whether the deposits of the far interior will ever be worked on a large scale seems to depend more on the future development of communications in the province than on anything else.

TIN.—I have not visited the famous cassiterite deposits of Kochiu in the Mêngtzu region of Southern Yunnan, but they have been described by Leclère, Deprat and W. F. Collins. These mines and their associated smelters form the most successful mineral enterprise of Yunnan at the present time. According to Leclère



The Railway Line Scaring a Steep Hillside

the mineral is derived from the denudation of the upper portions of ancient lodes, owing their origin to the tourmaline pegmatites injected through strata up to the Lower Trias in age. When Mr. Collins visited the mines about 30,000 men were employed altogether, and the deposits them being worked were all of alluvial origin. (See his paper on the subject, December, 1909, Institution of Mining and Metallurgy, and *The Mining Magazine* for January 1910.) Deprat believes it is unlikely that other tin-stone deposits will be found in Eastern Yunnan outside the Red River region, as the geological conditions are not favourable. I hold similar views regarding those parts of Western and Central Yunnan that I have traversed.

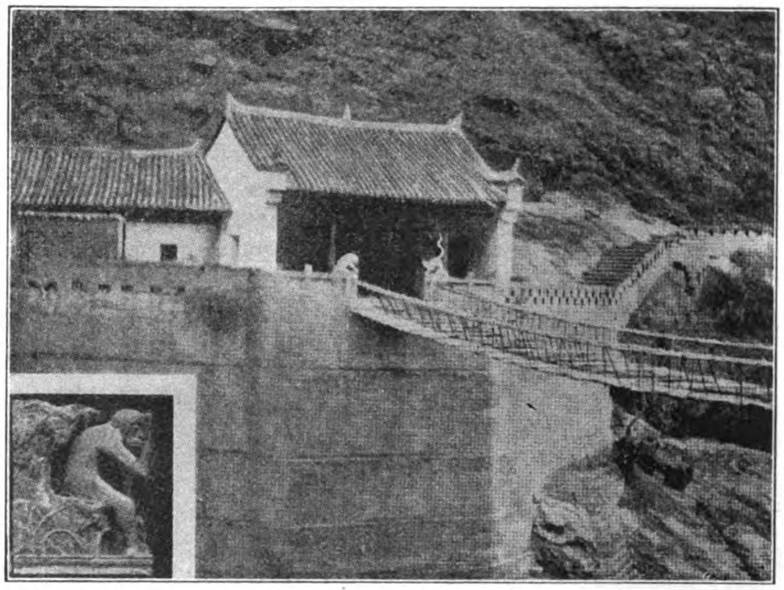
ORPIMENT.--The importation of orpiment (arsenic trisulphide) from Yunnan into Burma has been going on for a considerable number of years. The mineral is mentioned by the earlier writers who visited Upper Burma before the annexation, and of later years the traffic in the ore has increased, and the traveller by the main trade route is impressed by the number of mule caravans met with bringing orpiment down to Bhamo, whence it reaches Mandalay and Rangoon. Owing to the inaccessibility of the country and to the secrecy of the merchants engaged in the trade, no one had discovered the exact locality of the mines nor had they been visited by a European previously. They lie at the head of a narrow ravine, probably a tributary of the Yangpi Ho, itself an affluent of the Mekong, at an elevation of over 8,000-ft. above sea-level, two days to the south-west of Hsiakuan or three days from Tali Fu. Except for small isolated communities of Lolo tribes, the country passed through is uninhabited, and consists of bleak, sparsely-wooded mountains. Food for both man and beast has to be carried with the traveller. The district is unsurveyed, and my own observations were hampered by the inclemency of the weather. Blinding snowstorms swept the hills during my stay, and this, with the intense cold, made outdoor work somewhat difficult. The rocks in the immediate vicinity of the mines consist of reddish, reddish-purple, and hard greyish quartzitic sandstones, with black bands in places, and reddish, nodular shales. Probably these rocks are associated with the red beds series. During the period of Mohammedan influence in Yunnan the mines are said to have been worked by the rebel powers centred in Tali Fu. After the fall of that city they have been entirely controlled by the Chinese. Mineral was being won from seven drifts which entered the hill on the north-east side and proceeded down as steep inclines, until the ore-bearing stratum was reached. The workings that I was permitted to examine had been made with thoroughness and care. None of the drifts were very extensive. The deposit appeared to be confined to one particular band of greyish quartzite, associated in places with soft black shales. The whole of the former band was more or less mineralized. There was no distinct vein or single fracture. A thorough shattering of the rock seemed to have taken place and orpiment to have been deposited in the bedding, joint, and fracture planes, and also to have replaced the minerals of the rock to some extent. Small quantities of realgar (arsenic sulphide) occurred, and minute cubes of iron pyrites were found. The arsenic sulphides were in irregular strings, swelling out into patches and bands, which sometimes attained a thickness of over 12 inches. These larger lumps, however, did not persist very far, but only continued a short distance before being replaced by others. The mineralized band was at least 4-ft. thick, perhaps much more, and I can express no opinion as to its lateral continuations, which may be considerable. I have no views to offer as to the origin of the ores. All the work was done by hammer and chisel, and the broken ore was carried to the surface in baskets. The richer pieces were picked out and the remainder roughly crushed and panned in closely woven bamboo baskets to separate the gangue. There was a great waste of the finer disseminated ore by these methods; indeed it was surprising how much material was rejected. The waste heaps must contain large quantities of mineral, which could be easily recovered by means of a simple concentrating plant. Most of the orpiment is exported to Burma, though a little, with the realgar, is kept for local sale.

Mengtsze "Lolos"

GOLD.—Gold dust has always been an export from Yunnan, and quills of it may be purchased to-day about the frontier towns of Burma. There is a gold-beating industry in Tali Fu, and Yunnanese gold leaf doubtless gilded many of the old Burmese pagodas. Yet these facts, coupled with Marco Polo's story of the gold currency of the western dominions of the great Khan, and the custom of its inhabitants in covering their teeth with thin plates of gold, "which are fitted with great nicety to the shape of the teeth and remain on them continually," do not warrant the exaggerated notions of some writers regarding the auriferous riches of Yunnan. As far as I could gather there is only one lode-gold mine in the province, and most of the production, whatever its total amount may be, comes from a multitude of small placer workings operated spasmodically by the poorer inhabitants of the land along the banks of the greater rivers. The early Chinese writers mention four mines in operation about 1850, all of which seem to have been alluvial workings. Joubert, in 1867, stated that all the rivers of Yunnan carry gold, a statement which must not be taken too literally. His account of Talang T'ing gold mines appears to be the only one ever published. At the base of and on the flanks of a mountain toward the north of the city, a very folded and fractured reddish sandstone is found overlain by slightly crystalline and compact limestone, traversed by serpentine dykes, crossed by numerous narrow quartz veins. These have been opened up by very numerous shallow workings over a distance of four kilometres. Both gold and silver are irregularly

dispersed in the serpentine in the form of fine lameteæ and grains; they are found in a regular manner only in the interstices of the quartz veins or other rocks which traverse or border the serpentine. After crushing to powder, the ores are concentrated in pans and rockers, and the residue is treated with mercury to separate the gold contents. Leclère seems to have been much impressed with the gold-bearing deposits of Yunnan, especially with the gravel benches and conglomerates of the Yunnanese course of the Yangtze, which is known as the Kinchachiang or "River of Golden Sands." According to Deprat, gold mines are numerous in the zone of the north and south folds of Ssuch'uanese Tibet, and the tributaries of the Yangtze, such as the Yalung, coming from this region, carry gold into the parent river where it is found in the recent terraces or in the actual bed.

It is beyond question that the sands of the present river beds and of the raised terraces in the upper courses of the Salween, Mekong and Yangtze carry gold. Every traveller who has been in those parts of Yunnan has commented on the fact. Among others, Dr. Logan Jack, Major Davies and the Swedish missionary Amundsen may be mentioned. Both the latter believe that the Mili country is rich in gold. This region is situated in and about the junction of the Litang with the Yalung. The state seems to be entirely Tibetan, and Mili itself, which is only about 20 miles beyond the Yunnan border, near the second bend of the Yangtze, is described as practically nothing but a big monastery. The amateur opinion of Amundsen and Davies have been confirmed by specialists like Mr. H. W. L. Way, who wrote in *The Mining Magazine* in July, 1916, as follows: "From the Chienchang valley through which flows the An Ning river on the east, to the Tibetan frontier on the west, and from Tachienlu on the north to the Kinsha (Yangtze) on the south, there is a stretch of country that is without doubt richer in mineral wealth than any other part of China, and one of the most highly mineralized spots in the whole world. This is a region of great disturbance geologically, and it is full of lodes and veins carrying gold and metallic ores. The streams and rivers contain many deposits of alluvial gold. Evidences of mining activity are seen on all sides, and mule trains are seen carrying copper matte and metal, lead bullion, iron, and other metals. The lodes are worked in a primitive way in the oxidized zones by the aboriginal tribes under the supervision of Chinese. The sulphides are left behind as too refractory." Mr. Way then describes the Maha gold mine and gives a long list of known mineral occurrences. It is only 40 or 50 miles as the crow flies from Maha to Kulu, where Davies was treated with suspicion, as the lamas thought that he had come to dig for gold. It is a much shorter distance to the borders of "Huang Lama Tifang," as the Chinese call Mili. There are strong reasons for thinking that the geological structure is much the same across the



The Kiangti Bridge across the Niulan, Decorated with Bridge Monkeys

whole region, and the fact that the western part of it is inhabited by a more or less independent race, unfriendly to the Chinese, may well have prevented its mineral resources from becoming better known.

Native placer workings are carried on all along the Yunnan course of the Yangtze. I have seen them myself around Chinchiangkai, and from Machang to the junction of the Yalung with the Yangtze. At the former place, which is three stages to the north east of Tali Fu, the gravels in the present river bed were being washed by tribes-people in the employment of the local Chinese. Further down stream the auriferous ground was won from shallow drifts into the high-level alluvium. Around Hsinkai, the river terraces are pierced in many places by these old excavations.

Near Alushih, a small town 20 miles north of Shunning Fu, gold washing was being actively carried on in a raised terrace deposit of a small tributary of the Yangpi Ho, itself an affluent of the Mekong. The gold obtained was coarse and did not appear to have travelled far. It was probably derived from veins traversing the old slates of the vicinity. The deposit was not a large one, but interesting as showing another type distinct from the bigger ones in the rivers of northern Yunnan.

To be concluded.

Where comes the Railroad comes Civilization

Bamboo for Paper Making

The current number of the *Bulletin* of the Imperial Institute, London, contains a comprehensive and valuable article on the utilization of bamboo for paper-making. Bamboo has come much to the front in this connection during the last year or two, and it seems likely that in the near future the manufacture of paper from this material will be undertaken on a large scale in several countries. A British firm have been granted a concession for cutting bamboo in the government forests in Trinidad and have also established a bamboo plantation there of 1,000 acres. Leases have been granted or applied for, for working bamboo forests in Burma, Madras, and other parts of India. In Indo-China, two factories equipped on up-to-date lines, are actually manufacturing paper chiefly from bamboo. Paper made entirely from bamboo pulp is of high-class quality. On the whole it is too good for the manufacture of ordinary news-print and is more suitable for the better grades of printing paper. The article gives an account of the general characters and distribution of bamboos and a detailed statement as to their occurrence and utilization in various countries. The technical side of the subject is fully dealt with, particulars being given of the various methods which have been employed for the conversion of bamboo into paper-pulp.

Hongkong's Huge Contract

IMAGINE for a moment Hongkong's "Finest Site" surmounted by a solid column of earth rising nearly a mile into the air and you will have some conception of the amount of soil to be torn from Morrison Hill and thrown into the harbor under the Praya East reclamation scheme—the most costly venture yet fathered by the local public works department, Tytam reservoir and the harbour of refuge works not excepted, says the *China Mail.* A hill of 3,300,000 cubic yards is to be demolished and its place taken by flat roads and recreation grounds. A watery waste of ninety acres is to be reclaimed, sea walls and piers built, the area to be divided into blocks suitable for broad thoroughfares, modern godowns and tenements. Existing streets are to be widened or straightened, elaborate drainage works are to be constructed, and many other desirable ends achieved. Light railways are to be laid and temporary drains constructed, and by either one of two ingenious expedients, the traffic arteries passing between Morrison Hill and the existing foreshore are to be left as free from external interference as they are to-day. For six years the work of throwing a hill into the harbor will progress unceasingly. One of the first steps will be to commence work on the huge sea wall planned to start at both ends simultaneously, while the temporary drainage works will speedily give way to more permanent works.

Plans have been completed to the minutest detail (though the method of transport over or under Queen's Road East has not yet quite been determined) and tenders have been called for "reclaiming approximately 90 acres of the Praya East foreshore with materials obtained by cutting down Morrison Hill ; protecting the area so reclaimed by sea and quay walls, constructing sewers, stormwater drains, reinforced concrete piers, a refuse boat pier, retaining walls and temporary and miscallaneous works." Tenders close at the colonial secretary's office at noon on June 15, 1921, and it is reasonable to assume that the contract will be let by the middle of the following month. It is understood that the period allowed the contractor to complete the work is six years, as little, if any, of the necessary plant is in the colony at the moment, but it is felt that the work might quite possibly be finished within five years' time. Alterations to the existing drainage system in the area affected are not included in the scope of the tenders now advertised.

The total estimated cost of the scheme to those participating, including drainage works on or incidental to the reclamation, water mains, forming and surfacing of roads, the construction of piers in place of the existing piers which are to be destroyed, supervision, and various other charges, amounts to $3,385,000. The cost per square foot of the area available for appropriation—2,249,000 square feet—is therefore estimated at $1.50 1/2. Adding a premium of 25 cents a square foot, the estimated cost to the lot owner amounts to $1.75 1/2 per square foot. The exact area of land available under the scheme when the reclamation work has been completed will be 87.72 acres, of which 51.63 will be available for appropriation. The remaining 36.09 acres will be divided into roads. Stretching from the Royal Naval Arsenal Yard to the Sugar Refinery at East Point, the reclaimed land will have a minimum width of 600 feet and a maximum of 950 feet (both approximate figures). The area is divided into blocks. With a width of 275 feet, those nearest the foreshore will be admirably suited to the building of godowns, while the more narrow inner blocks (125 feet wide) will be more suitable for the erection of tenements.

Naturally, an important part of the work will be the new sea wall on which it is planned to commence from both ends simultaneously. At the western end a quay wall 235 feet in length providing a depth alongside of 16 feet 4 inches at low water, will be constructed for the admiralty. The remaining stretch to East Point will be protected by the usual sea wall (similar to that in Connaught Road Central), roughly 4,935 feet long. This sea wall—from the new alignment of Arsenal Street to the Sugar Refinery—will be so designed that ships will not be able to come alongside except at piers, though, of course, the usual mooring rings will be provided for junks. The existing piers, of course, will be destroyed and their places taken by public piers—one 35 feet 4 inches wide and 120 feet 8 inches long; and the other T-shaped, 21 feet and 4 inches and 41 feet and 2 inches wide, by 40 feet long. The refuse boat pier (cement concrete block construction) will be 63 feet wide and 58 feet long, providing a depth of water alongside of 15 feet 2 inches at low water. The refuse storage shed, 32 feet 6 inches wide by 58 feet long, will be constructed on new lines. Unlike the present open sheds which allow flies to come and go at will, the new shed will be covered in. Furthermore, the doors facing the harbour will hinge downwards to act as chutes for the discharge of refuse into the waiting barges.

One of the most notable features of the scheme is the generous provision made for roads, none of which will be less than 75 feet in width, while the main east and west road will be 100 feet wide—the same width as Nathan Road, Kowloon, and twice the width of Des Vœux Road in the city. In order that this new main thoroughfare may start at the entrance to the Royal Naval Arsenal Yard, thus eliminating an awkward turning, an exchange of land will be effected with the admiralty and the property known as the Blue Buildings will be resumed and partly demolished.

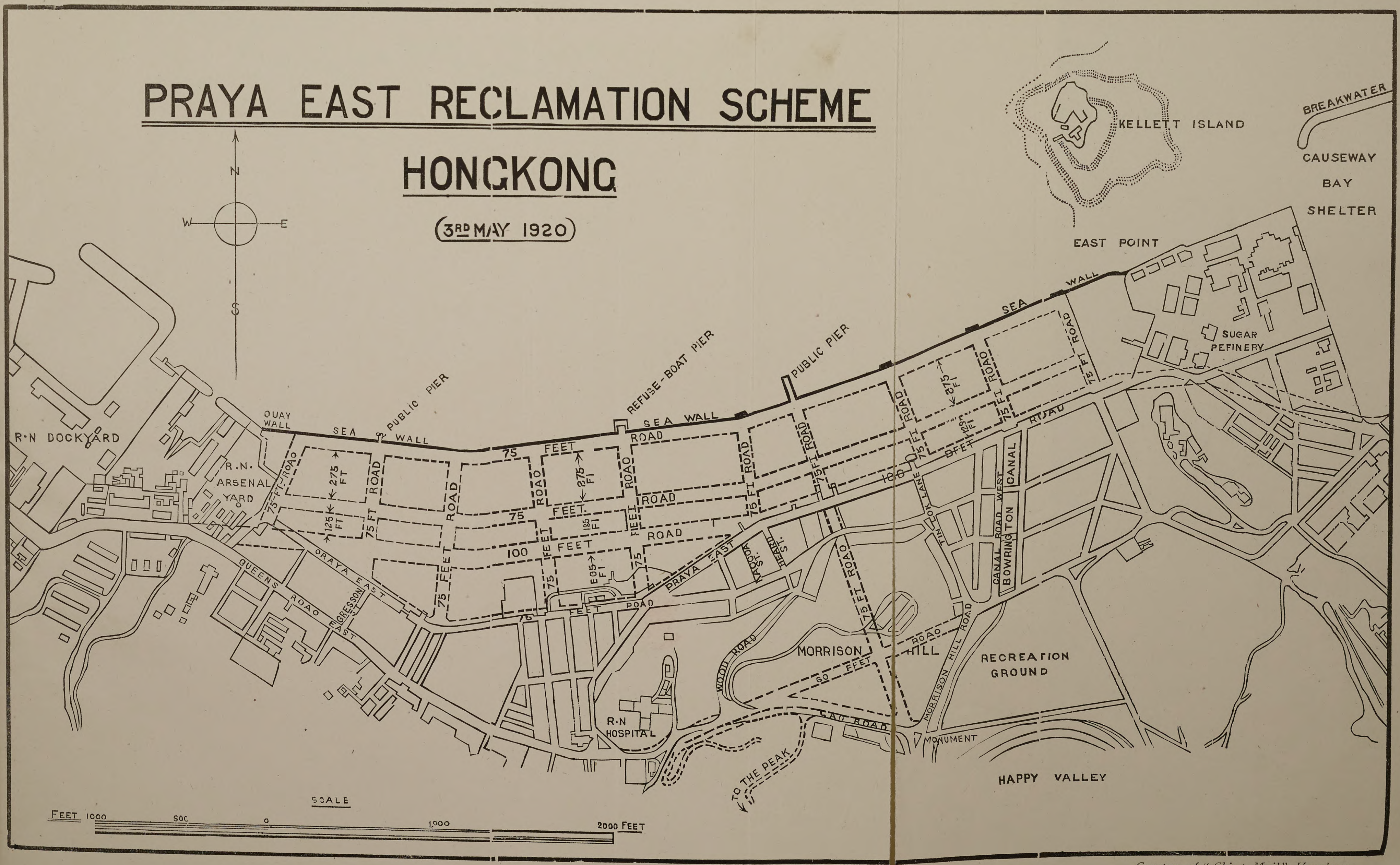
A Handsome Thoroughfare

The new road, which should make a handsome throughfare when completed, will continue along the reclamation and rejoin Praya East at Malory Street. From Malory Street to East Point the 100-foot road will be preserved by widening the existing praya, and that portion of the existing praya roadway extending from Gresson Street to Malory Street will be widened to 75 feet. The thought of a splendid 100-foot road is not complete without many things, such as broad footpaths and trees, also trams. It may, however, be some little time before trams are seen on the new thoroughfare. The matter rests, not with the government, but with the Tramway Company. The average life of a tramline is 15 years. The Tramway Company has just reconstructed the track through this district, and it does not seem probable that they will relay it elsewhere until they have had a full return on the recent expenditure.

As already mentioned, the material for the reclamation will be obtained by demolishing Morrison Hill which will provide almost, if not quite, sufficient soil for the purpose when reduced at the centre to a height barely $3\frac{1}{2}$ feet above the level of the existing praya.

This means that the centre of Morrison Hill will be lowered $175\frac{1}{2}$ feet (from 192 to 16.50 feet above low water), and that the total quantity of filling material to be transported to the reclamation works will be 3,300,000 cubic yards.

Under the Morrison Hill development scheme one through road 75 feet wide will be made extending from the Happy Valley Monument to the new foreshore, crossing the existing Praya East at right-angles between Heard Street and Tinlok Lane. At right angles to that road there will be an extension of Queen's Road East sixty feet wide to join Leighton Hill Road near the Police recreation ground. Entrance to the road to the Peak will be made at the western end opposite the present Royal Naval Hospital entrance. It will be possible to go along the new low road to Leighton Hill Road, or to the Monument at Happy Valley, or enter the road to the Peak. It will also be possible to join the Peak Road



Courtesy of "China Mail" Hongkong

from the Valley Monument end. This approach road to the Peak Road will be made at a maximum height of thirty feet above the low road in continuation of Queen's Road East.

After making provision for an extension of the recreation ground at Happy Valley by the inclusion of the triangular area on the east side of the new 75-foot road, there will remain 722,000 square feet of land, Of this area, land aggregating 397,000 square feet (9¼ acres) will be available for building. It is gathered that the intention is that Morrison Hill Road from its present junction with Leighton Hill Road to Wongneichong Road at the Valley Monument will form part of the new recreation area and that the present tramway services will pass along the new 75-foot road leading to the praya.

Under the scheme. Bowrington Canal will be filled in and the existing open nullah, which at present discharges into the canal, will be replaced by massive twin concrete culverts, which will be built under the new road leading from the Happy Valley grandstand enclosure to the new harbor frontage. These two large culverts which will carry the drainage of Wongneichong to the harbor, will have a total width at the base of 32 feet and a height of twelve feet. Immediately they are ready for use Bowrington canal will be filled in. As already mentioned, the alteration of existing drainage is not included in the contract for which tenders have now been called, and it is understood that arrangements have been made for this work to be carried out separately in order that the work of the main contract will not be impeded, as it will be necessary to reconstruct the existing drainage system because the whole of the Wanchai drainage system is at a level too low to give sufficient fall for efficient discharge into the harbor at the distance it would be from the new sea-wall. Accordingly, arrangements have been made for intercepting the existing drainage until the Wanchai system has been reconstructed at a higher level. Until the big culverts are in use two, or perhaps three, "turnouts" or open intercepting sewers, will be provided. Free for reclamation work, the existing foreshore, will soon be covered up. Incidentally, the existing foreshore, which has been known to emit offensive smells at low tide, will be rendered less disagreeable while the work of reclamation is in progress, thanks to these open sewers.

An Awkward Question

How is a hill to be demolished, transported across several streets, and then dumped into the harbor ? Given the necessary plant and labor the first and last portions of the question present no insuperable difficulties. Not so the question of transport. In the contract for which tenders have been called, provision is made, it is understood, for contractors to tender so far as the material obtained by the demolition of Morrison Hill is concerned, for the following alternative modes of transport:—(*a*) The whole by proposed transport lines under Bowrington canal bridge, Praya East; (*b*) the whole by overhead transport lines between Hard Street and Tinlok Lane; (*c*) partly by (*a*) and partly by (*b*); and (*d*) the whole by such other methold as the contractor tendering may desire to adopt, full details of which he is requested to submit with his tender. It is distinctly made clear that the whole of the filling material shall be transported without crossing Praya East on the level so that there will be no interruption to traffic. In the unlikely event of the overhead method meeting with final favor, it is definitely stipulated that a minimum headroom of 18 feet must be provided above the level of the tramway service. Consequently in any event there will be no interruption in the traffic on Paya East.

The Brain on the Scheme

The most feasible proposal seems to be that made by Mr. John Duncan, A.M.I.C.E., public works department executive engineer, whose resourceful brain has directed the preparation of all plans, surveys, and soundings connected with the scheme —indeed, it might be said with justice that Mr. Duncan is the guiding genius of the whole scheme, so great the thought and skill he has devoted to making it a practical reality. As "the engineer in charge of the Praya East Reclamation Works" (not by any means his only harbor work, great though it is), Mr. Duncan originated the plan for transporting the Morrison Hill material under Bowrington Canal bridge. The track lines, it is planned, will leave the hill by crossing Morrison Hill Road opposite the Police Club. They will then pass along the Canal Road west. Half-way along they will branch off into the canal and pass under the bridge between the west pier and the west abutment and so to the field of reclamation. This scheme, at first sight so simple, raised one little awkward problem. As there is not sufficient headroom between the level of high tides and the underside of the Bowrington Canal Bridge for the passage of a loaded truck and as the bridge cannot be raised without serious interruption to the low level tramway service it has been arranged to construct the transport lines in a concrete trough three feet below high water. The drainage of the canal will discharge through the remaining two spans of the bridge. Consequently trucks will be trailed to the head of the incline passing under the bridge, released by the locomotive on the shore side and seized by another locomotive waiting on the harbor side of the bridge. In this way the whole of the material can be transported from Morrison Hill to the reclamation area with the maximum of efficiency and economy and the minimum of danger to those engaged in the work and the public alike. Furthermore, the moment work is completed on the big culverts under the new road leading to the foreshore the waters can be permanently diverted, as intended under the scheme. Locomotives will not pass under the bridge, but there will be ample room for the passage of loaded trucks, as the line will drop one in 130 and rise the other side at a similar incline. The lowest portion of the line will be at a level of 6 feet above low water, but as the tide will rise to nine feet above low water, a portion of the line will actually be below sea level for a time of the day. Scientific shunting on both sides of the bridge will ensure that the trucks are handled with the minimum of delay.

The advantages of the scheme, direct and indirect, are many. Of the latter a notable instance is the practical certitude that the new 100-foot road, which is such a prominent feature of the project, will some day be connected up with Causeway Bay and the new wide road leading to Shaukiwan. Time alone can tell the ultimate benefits that the project will bring in its train. For the moment we stand waiting for the first ring of the hammer that will proclaim the great work has begun.

The Chartered Bank of India, Australia & China

At the sixty-seventh ordinary general meeting of the shareholders of the Chartered Bank of India, Australia and China held in London on the 8th of April the Chairman, Sir Montagu Cornish Turner, in speaking of the future course of Eastern trade said, "It is dangerous even in normal times to attempt to forecast the course of events, and to essay to do so now, under present abnormal world conditions, would be more dangerous still; but it may not be imprudent to state that, judging from cables reaching us this week from our respective agencies and branches, the outlook in the East is much happier, and that indications from the several spheres point to a distinctly better undertone, which we hope will, in the course of time, develop."

Later, Sir Montagu Cornish Turner said, "You will be asked to-day to confirm the election of Sir John Jordan, G.C.I.E., to a seat on the board. Sir John has had an extraordinary period of service in China from 1876 to 1920, and for the past fourteen years filled the position of British envoy extraordinary and minister plenipotentiary with great honor to himself and with great advantage to the British empire. By his tact, his diplomacy and his genial nature, Sir John Jordan has won a name for himself amongst official and non-official Chinese which will never be forgotten."

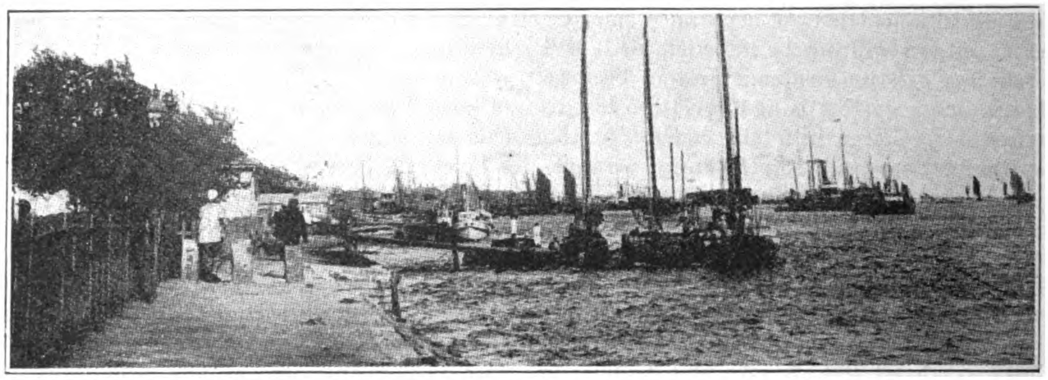
The capital of the Bank has been increased from £1,220,000 to £3,000,000 and the reserve fund now stands at £3,500,000.

Engineering Notes from the Outports

Maritime Customs Reports

NEWCHWANG

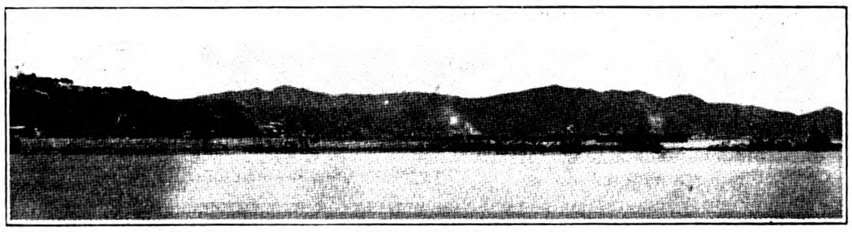
LIAO RIVER CONSERVANCY.—The works under the control of lower conservancy are the deepening of the bar by the construction of training banks and dredging, the closing of the east and west channels, and the protection of Duck Island Bend. The closing of the west channel, some six miles below Newchwang, was the first work undertaken. It was desired to direct on to the bar, and thus obtain full advantage of its scouring effect, the immense volume of water that had hitherto escaped by this channel, which exceeded a mile in width with from 6 to 10 feet of water at low tide. This channel was effectually closed by the end of 1916 and only now requires maintenance from time to time. The next work taken in hand was the east training bank, similar in construction to that across the west channel but of greater length, being six miles long and at places 22 feet deep at half-tide. The work on the lower river section is being pressed on rapidly; some 20,000 feet of the east training wall have now been completed, and, as the plant ordered is now delivered, increased progress should ensue. During the year the east training wall has been continued seaward for a distance of about 4,500 feet, and its entire length, 20,000 feet, has been raised from a level of 85 to 89 above Newchwang datum, *i.e.*, 4 feet. By the spring of 1922 it is hoped to have a powerful suction dredger at work on the bar, which, in conjunction with the training walls, will it is anticipated, give a 26 feet depth available across the bar at ordinary high water and thus make the port of Newchwang (Yingkow) accessible to ocean shipping. There is now a good navigable channel from inside the present outer extremity of the training walls to above Newchwang giving a depth of 28 feet at ordinary high tides, and the bar crossing is showing great alterations and improvements. Since 1919 a total scour of 1,500,000 *fang* of soil is shown to have taken place over the area of the bar surveyed, viz., 11,000 feet wide. If the present rate of scour remained constant, it would, the engineer avers, take seven years to effect the required depth by scour alone; whereas with the addition of a suitable dredger it would be possible to obtain a depth of 26 feet at high water over a channel 500 feet wide from the sea to above Newchwang.



River Liao at Yingkow

LUNGKOW

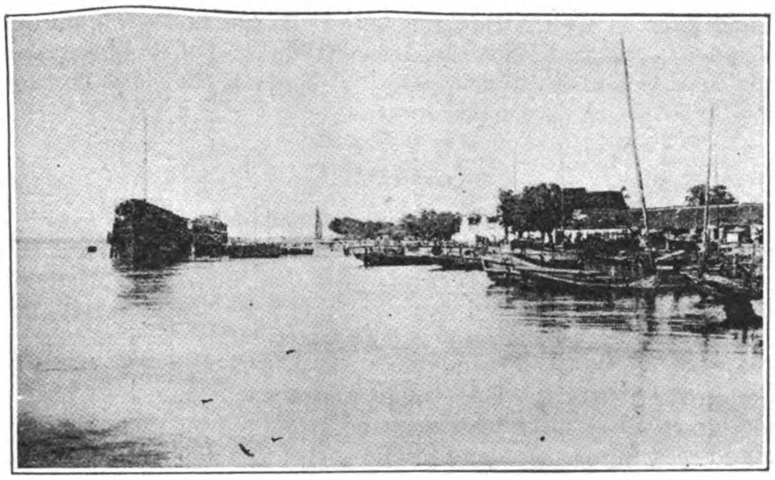
With the approval of the government, a site for a new town on modern and fairly extensive lines has been purchased and laid out. A handsome reinforced concrete pier has been built, the channel to which will be improved by dredging as soon as weather permits in the coming spring. This pier has been connected with the old town by a narrow-gauge railway for the haulage of cargo and by a wide carriage road. A godown has been erected near the pier for the storage of cargo; and, within the limits of the new town but conveniently near the old, an electric light works is under construction. By carrying out these public works the new Settlement Development Company have contributed their full share towards promoting, or preparing the way for, the welfare of the port—an effort as comprehensive as could be undertaken by a small body of the public, but ineffectual without a railway to back up the scheme. It is not, then, to be wondered at that the great interest aroused by the inception of these operations began to flag when the construction of the much-looked-for railway was deferred indefinitely; but that interest has been aroused again by the hurried building, within the last month or so, of the new motor road from Weihsien. This road should be completed as far as Lungkow by February. Though the improved communication thus afforded may in itself make a marked difference to the trade returns of the port for 1921, the making of this road introduces a point of far greater import, and that is the possibility of the road being converted into a railway—the stations along its route are being designed with that in view,—thus giving to the port, far sooner than could have been expected a few months ago, the one thing needful to ensure its future prosperity.



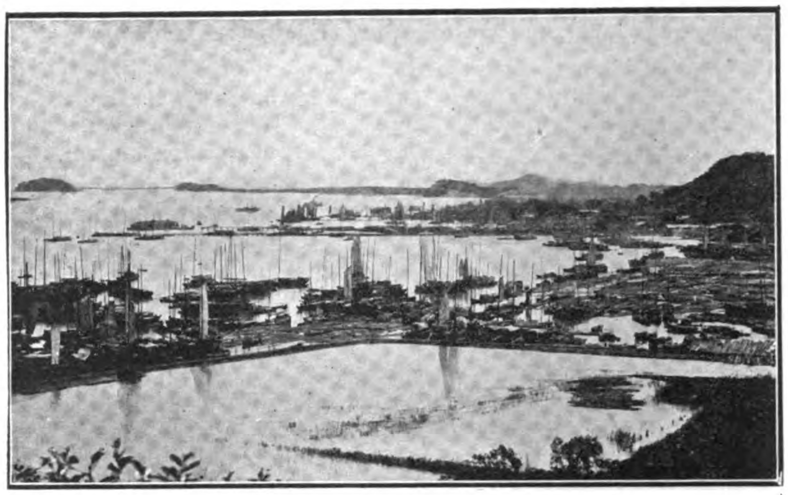
Chefoo Breakwater (now completed)

CHEFOO

HARBOR IMPROVEMENT WORK.—The report of the Commission's engineer-in-chief for the year is as follows: "*Breakwater.*—Throughout the year work was continued steadily. The north caisson was successfully placed in position on the 29th May and was rapidly filled with concrete. The last large blocks were set on the 10th June, and work on the masonry superstructure and the depositing of heavy rubble and small blocks on the berms were carried on without interruption. The whole of the work on the breakwater was completed by the beginning of December. *Mole.*—Work has been carried on steadily form the 1st March to the 30th December. To date, some 1,194,000 cubic yards of sand, 167,000 square yards of brushwood zinkstuks, and 64,500 tons of rubble have been deposited in the foundations and lower part of the mole and nearly 173,000 tons of rubble of various grades in the upper part. The mound is approximately to its full height, and protected by



Nanking, on the Yangtze



View of Chinkiang Anchorage. One of the Principal Cities in the Export of Groundnuts

heavy rubble on the slopes for a length of about 3,200 feet. A total length of 1,700 feet of parapet wall has been built. The reinforced concrete caisson for the east end of the quay wall was successfully sunk on the 1st August and has been filled with concrete, and all the large masonry blocks in the quay wall and wing walls has been set, and about half of the masonry superstructure has been built. Since the commencement of the works 18,000 tons of cement have been received." The difficulty in quarrying was again the main source of delay. The contractors set up a compressed plant for drilling; that it was a failure was ascribed to the quality of the drills; but after further expert experiment in the winter it is reported that the poor results were due to want of experience in running the plant. It had been fully expected that the works would be completed in November, but at the moment of writing it is doubtful whether they will not run into 1922. The protection given to shipping is already great. As a measure of famine relief, a mud road is being constructed from Weihaiwei. It will be suitable for motor-trucks, except in bad weather; so, if kept up, the value of the harbor works will be appreciated. Foreigners there are endeavoring to have other roads built round Chefoo, and were willing to pay an extra surtax for such roads to be constructed by the harbor commission, but the plan is at present not in favor with the local Chinese. Roads would, however, bring far more trade to the port than the proposed Weihsien Railway.

HUNCHUN

An experiment was made in July by a group of Chinese merchants to light the town with electricity. It proved a failure, and better machinery was about to be contracted for with a British firm in Vladivostok when the *hung-hu-tzu* raided the place. The new venture was thus nipped in the bud.

SOOCHOW

Several new commercial ventures started during the year. In March the erection of a large cardboard manufactory, the first of its kind in China, was commenced on the bank of the Grand Canal, to the west of the Ch'ang Men. During the summer an extensive match factory was built—the Hung Sheng Huo Ch'ai Kung Ssu with a capital of Tls. 120,000. This plant is on the bank of the Canal, outside the Hsu Men, and belongs to a Shanghai syndicate. It started work in December, and produces daily 40 boxes of 50 gross. Another match manufactory is also in course of construction. A new electric light company, styled the Soochow Electricity Works, commenced in October to erect poles in the principal streets. The new company is reported to have the support of the gentry, and is opposed to the old company, on account of having disposed of part of their interests to Japanese capitalists.—In October a Kiangsu-Chekiang Taihu conservancy office was opened inside the Hsu Men.

NANKING

Large areas of low-lying land continue to be filled in at Hsiakwan and building operations have been very active. Near the new bund the Electric Light Company has erected a branch power-station, and the Chinese firm of Shun Ho & Co. has established at Hsiakwan a wharf and coal yards for handling the Kailan Mining Administration's coal.

HANGCHOW

The model factory for the finishing of woven textiles, established by the provincial authorities, was scarcely a year old when it had to be closed; it has passed into the hands of the Silk Guild, together with the whole of the machinery; and the provincial Mint, after being out of commission for many years, now occupies the buildings and has begun to issue dollars of the Yuan Shih-k'ai pattern. The steam-dredger has been constantly at work keeping the West Lake free from weeds and silt; but, while such conserving operations deserve commendation, the erection in that supremely picturesque spot of vilely designed foreign-style buildings produces a feeling of protest in the minds of those who, decades ago, saw the famous West Lake in its unspoilt pristine beauty.—The Standard Oil Company built an oil installation of 40,000 gallons capacity at Kashing.

NINGPO

No new construction was carried out during the year on the Shanghai-Hangchow-Ningpo Railway, which still stops short at Tsao-o, nor has anything definite been arranged in regard to the extension of the line to Hangchow. According to figures courteously supplied by the company, 1,299,672 passengers and 75,868 tons of freight were carried on the Ningpo-Tsao-o section during 1920, a decrease in each case of about 5 per cent. compared with the returns for the preceding year.—The profits of the Ho Feng Cotton-spinning Factory again surpassed $1,000,000. The company was started in 1904 with a paid-up capital of $600,000, divided into 6,000 shares of $100 each. The capital was increased to $900,000 in 1916. The factory occupies about 30 acres of land on the Kiangtung side of the river, opposite the Custom House. For the past two years it has been running day and night, with scarcely any intermission. The number of hands

employed is 2,500, and the following is the wages table per day:—

	Minimum	Maximum
Skilled labor (*e.g.*, foremen):—		
Men	$0.35	$0.60
Women	0.30	0.50
Ordinary labor:—		
Men	0.30	0.50
Women	0.20	0.30
Boys (aged about 15 years) ...	0.20	0.30
Girls „ „ ...	0.10	0.20
Small boys (aged about 10 years)	0.10	0.20
„ girls „ „	0.07	0.10

Most of the cotton used is produced locally, and the factory is able to turn ont about 7,000 piculs monthly of coarse yarn, chiefly No. 10. With the raw product at their doors, an abundant and absurdly cheap labor supply to draw on, and no vexatious factory laws to observe, it is not surprising that their annual profits should have exceeded their total capital on at least three occasions.—Mention has been made above of the hand-weaving factories at Chinhai. These are the Kung Yi and Chen Yi Cloth-weaving Companies. The former concern has been in operation for more than 10 years; the latter was established in 1916. They each started with a capital of $30,000 and are equipped with 250 and 200 wooden hand-looms respectively, besides a certain number of old-style spinning-wheels for winding the yarn. The two undertakings together employ about 600 hands, chiefly women and children, who work from dawn to dark and are paid by results. On a normal day a woman can weave a piece of cloth 20 feet long and 2 feet wide, earning thereby 160 cash, which is equivalent to nearly $0.12: whilst a child can wind 100 spindles of yarn, for which he will be paid 100 cash, or $0.07. Both of these companies are reported to have made considerable profits during the past few years.

KIUKIANG

The Yu Sung Match Factory, with a capital of $250,000, promoted by Mr. King Hao-yu, was completed during the course of the year. The factory covers an area of 18 *mow* and employs about 400 hands, men and women. The daily output is from 50 to 60 chests, each containing 50 gross of small-size non-safety matches of inferior quality for consumption in the interior. All the materials required for the manufacture of the matches are imported from Japan.—The gross receipts of the Nan-Hsun Railway for the year totalled about $600,000, whilst the total expenditure, including interest on loans, amounted to $800,000. The rolling-stock, permanent way, and bridges are in a bad state of disrepair and will entail a very heavy outlay in the near future if the line is to continue working. A short-term loan of $400,-000 was contracted with the Bank of Taiwan and another of $20,000 with the Bank of Communications to meet outstanding obligations and pay the salaries of the staff, which had been three months in arrears. Mismanagement and corruption are rampant, and the company is so heavily in debt to the Japanese that sooner or later these creditors will take over the running of the line, with a possibility of extending it to Kwangtung and Fukien, as once planned by them, thus enabling it to pay its way.—The development of Pinhingchow referred to in the 1917, 1918 and 1919 reports, has been arrested by the squandering of all the funds; most of the principal roads are marked out, but no attempt has been made either to drain or pave them. The land is all taken up and is being rapidly built over; but it is regrettable that the laying out of the roads, etc., has had to be suspended owing to the want of funds. It promises, in the course of a few years, to become the business quarter of the city. The Kuling cable railway is still a thing of the future; the constructing engineer, who was wanted in 1919 owing to his disappearance with most of the funds, was subsequently arrested by the Shanghai police and returned to Kuling, where hopes were entertained that work would commence; but he disappeared again, to be found later on by the Hankow police; he was rearrested and imprisoned, being subsequently let out under police supervision. His death a few days later ended all hopes of commencing work, the funds having all disappeared.

NANNING

The insistent call for housing accommodation has found a response in a quickened activity in building, which has developed and expanded locally in keeping with the times.—The Nanning Electric Light Company deserves credit for meeting, with fair success, the increased demand for lighting facilities, but, unless it is able to extend, it will be unable to keep pace with the needs of the district it serves.—The provision of a wholesome water supply for the city has been engaging the attention of the provincial authorities for a considerable time, and two artesian wells, one inside the city and one outside the East Gate, were completed during the year. Four more of these wells are being sunk, and the authorities are now within measurable distance of arriving at the completion of their scheme.—The number of motor vehicles has been increased by the arrival of four bulky motor chars-a-bancs. The road leading from Nanning *via* Wuming to Szengen, a distance of 255 *li*, is an undulating, fairly smooth prepared surface road, but the surface of most of the roads in this district is unrolled macadam, with abundant loose stones, and conditions are not yet sufficiently good and improving to warrant any great use of motor traffic.

Wolfram Prospects in Burma

THE position of the Mawchi Mines, Ltd., Burma, reflects the present condition of the wolfram industry. The company's stock of mixed tin-wolfram concentrate in that country has been accumulating, until in January the amount was 939 tons. In addition, there are 123 tons of separated tin concentrate and 18 tons of tungsten powder waiting realization there. Also 473 tons of mixed concentrate is in Burma awaiting shipment. It was thought best under these circumstances to suspend output, and instructions were given accordingly on January 27. The company has borrowed £108,000 on the above-mentioned products from the bankers and others. In order to satisfy the bankers and to put finances in a better condition, the directors offered £60,000 prior lien debentures last November, and of these £25,500 have been taken up. They are now offering the remainder among debenture-holders and shareholders. Mr. C. M. Euan-Smith has recently made an examination, and in conjunction with Mr. John D. Hoffmann has submitted a report on the property. These engineers write hopefully of the future, provided market conditions improve, and are against the abandonment of the properties. The company also has a controlling interest in the Kassa Mining Co., which was recently formed to acquire properties from the Niger Company, and there is still a liability for calls. The Kassa properties have been developed on a small scale, but it is considered best to suspend active operations for the present.—*The Mining Magazine.*

Nobel House.—The Office of Woods & Forests has given permission for the Buckingham Palace Hotel, in Buckingham Palace Road, to be known as Nobel House. The reconstruction of the hotel and its conversion into business premises for Nobel Industries, Ltd., is nearing completion. It was recently announced that Nobel's Explosives Co., Ltd., of Glasgow, a constituent company of Nobel Industries, Ltd., had decided to dispose of their Glasgow offices in view of the coming move of their staff to London.

Chinese and Japanese Bonds on the American Market

AT a time when rumors of loans fill the Celestial air and Peking cabinets rise and fall according to the ability of any one of its members to coax the wary dollar into the coffers of the treasury, it is well to stop and review the position of Far Eastern bonds in the American financial market. It is not our purpose to review at length the various attempts made in the past to obtain a substantial footing for American capital in the development of China's resources through the flotation of government loans. Sufficient to say, that after twelve years of activity, Americans cannot point to one successful American loan or concession, from which their manufacturers or merchants have derived any tangible benefit. In nearly every instance where Americans have accepted Chinese loans and concessions, they have found that the rights had previously been ceded by China to some other power.

Up to date, Americans have little to show but a collection of contracts and concessions which may be executed only by co-operating with the interests whose rights were invaded. On the other hand, we have the friendship of the Chinese. In view, however, of the keen, cuti-throat competition in this market, the asset is one which cannot be safely depended upon to bring substantial returns in the face of other rationals offering lower prices, and better terms. If Americans had devoted as much time, thought and energy in originating or accepting legitimate opportunities as they did in seeking propositions involving lengthy and acrimonious diplomatic disputes, our enterprise in China would have been firmly established on an endurable basis, and a profitable market opened for our railway and engineering supplies. We wasted many years in pin-pricking the other powers in order to find out just how far they would go to uphold their favorite sphere of influence policy, and after we had tried them all and found that the door to our railway activities was hermetically closed, we now propose to co-operate with them as the one solution. The result is the consortium, which will internationalize all future Chinese government issues offered for sale in the American market.

The Chinese bonds listed on the New York Stock Exchange are confined to what are known as the "Hukwangs." In 1911 the Chinese government negotiated a loan of £6,000,000 with the old Four Power Group which was placed in equal parts on the London, Paris, Berlin and New York markets. The proceeds were applied to the construction of 1,124 miles of railways, and for the retirement of the $2,222,000 Chinese Imperial Loan of 1900. The bonds are secured by a first charge upon certain provincial revenues netting about $3,500,000 a year in amount and the revenues of the railways. These bonds were quoted last year on the New York Stock Exchange as low as 57. This was due in the first place, to the fact that the loan is in pounds sterling, bearing interest in the same currency, and payable in New York at the current rate of exchange, but with the pound down to four dollars the income at the above quotation was about 7 per cent., and with exchange at normal it will be nearly 9 per cent.

One of the reasons for the low quotation of these bonds is the fact that they are not secured on the physical properties of the line itself. The original loan of $30,000,000, which under ordinary circumstances, should have sufficed to build at least 600 miles of completed railway, has built only 200 miles whose revenues can be made to serve as security. At least half of the loan has been employed in paying interest. Add to this the repudiation by the Chinese government of the German quarter of the loan, which bonds are now largely in the hands of American, French and other investors, and we have the reason for this low quotation at this time.

In addition to the above, in 1916 China borrowed $5,000,000 on a 6 per cent. Three Year Note secured by the Wine and Tobacco Revenues from the Continental and Commercial Trust and Savings Bank of Chicago. The price was 97½. It became due on November 1, 1919, and as China could not pay, was replaced by a Two Year Note due November 1921 bearing 6 per cent. It sold at 98.125 through the same bank. These notes are secured by Goods Taxes derived from four provinces estimated at $4,911,692 (silver) and also by a charge upon the Wine and Tobacco Taxes, estimated to net $14,514,992 (silver) per annum.

This represents the sum total of Chinese loans on the American market.

Japanese Government Issues

Writing in the *Magazine of Wall Street*, Mr. George S. Hammond gives the following brief and interesting resumé of Japanese government bonds quoted on the New York Stock Exchange.

"The first of the Japanese bonds to be sold here was the 4½ per cent. Sterling Loan dated March 26, 1905 and due February 15, 1925. At the time of issue, the Russo-Japanese War had not yet come to a close, but Port Arthur had surrendered the previous January, the Battle of Mukden (February 24 to March 12) had ended in a Russian defeat, and that nation had obviously lost the war. The Japanese military achievements were much more glowing than was the state of her finances. The accumulated wealth of the nation was not large enough to bear the cost of the war, and resort was made to external borrowing. This loan was originally £30,000,000 in amount, of which £15,000,000 was placed in the United States through Kuhn, Loeb & Co., the National City Bank, and the National Bank of Commerce. The balance was sold in London. It is interesting to note that although the United States took one-half of the loan, the pound sterling, long supreme in international finance, took precedence as the form of currency to be named in the bond. It was provided, however, that both principal and interest were to be payable in New York at a fixed rate of $4.87 to the pound. In dealing on the Stock Exchange $5 is considered as equal to £1.

"Notwithstanding the novelty of the security to American investors, it was an entire success for, at that time, capital was abundant and interest rates were extremely low. New York Central 3½s, for example, sold up to 100⅞ in the year 1905. The Japanese 4½s were offered at a price of 87⅝, to yield about 5.50 per cent. The then liberality of return led to their being snapped up very rapidly.

"The bonds are secured by a first charge upon the net revenues derived from the Japanese government tobacco monopoly, which includes complete control of all branches of production, manufacture and sale. The net profits have recently averaged about £6,000,000 annually, against a maximum interest charge on these bonds of £1,350,000. This charge is now considerably reduced, for £7,502,600, or one-fourth of the total issue, have been retired. In the slightly more than five years which the bonds still have to run, the amount will be further reduced.

"In common with the general trend of the bond market, this issue, now selling at 82 ($820 for £200), is much below its pre-war quotations. The yield to maturity is about 8 per cent., and I think it is a safe assertion that in scarcely any other security can one find a similar return with an equal degree of safety."

A LIST OF CHINESE BANKS IN SHANGHAI

The most recent reports on the financial condition of these banks as compiled by the secretary of the Shanghai Chinese Bankers' Association, are as follows:

Bank of China—

Head Office: Peking

Branch Offices: 1 in Pei-tung-yuen, Peking District; 7 in Chili; 20 in Manchuria; 3 in Hupeh; 1 in Hunan; 11 in Kiangsu; 6 in Shantung; 4 in Shansi; 5 in Honan; 4 in Kwantung; 4 in Fukien; 10 in Chekiang; 5 in Kiangsi; 6 in Anhuei; 4 in Kweichow; 2 in Shensi; 7 in Szechuen; 2 in Suiyuan; 2 in Chahar; 2 in Urga.

Authorized Capital $60,000,000
Paid-up Capital $12,279,800
Reserved Fund ... ... $ 3,197,400
Founded, 1912.

Officers of the Head Office, Peking: Mr. Feng Kun-kwang, President; Mr. Chang Cha-Ao, Vice-President.

Officers of the Shanghai Branch: Mr. Sung Han-Chong, Manager; Mr. Nien Chun-teh, Vice-Manager; Mr. Feng Chung-tsing, Assistant Manager; Mr. Sze Kiu-ao, Chief of the Business Department.

Shanghai Office: 3 Hankow Road, Shanghai.

Bank of Communications—

Head Office: Peking.

Branch Offices: 3 in Peking District; 6 in Chihli; 4 in Shantung; 8 in Honan; 3 in Shansi; 13 in Kiangsu; 1 in Kiangsi; 1 in Chekiang; 1 in Hupeh; 1 in Hunan; 1 in Szechuan; 3 in Anhuei; 12 in Manchuria; 8 in Inner-Mongolia; 1 each in Hongkong, Singapore and Tokyo.

Authorized Capital $15,000,000
Paid-up Capital ... ... $ 7,500,000
Reserved Fund ... ... $ 3,223,828
Founded, 1907.

Officers of the Peking Head Office: Mr. Chao Chen-tien, Manager; Mr. Chen Feng-pao, Vice-Manager.

Officers of the Shanghai Branch: Mr. Chien Hsin-chu, Manager; Mr. Wang Chen-chu, Assistant Manager.

Shanghai Office: Corner of the Bund and Hankow Road.

The National Commercial Bank, Ltd.—

Head Office: Shanghai (14 Peking Road).

Branch Offices: Hangchow, Hankow, Tientsin, Peking, Mukden and Harbin.

Authorized Capital ... ... $ 1,000,000
Paid-up Capital ... ... $ 1,000,000
Reserved Fund ... ... $ 430,000
Founded, 1908.

Officers of the Head Office: Mr. K. C. Yih, Director-General; Mr. Y. T. Chiang, Mr. S. S. Shun, Mr. C. T. Ho, Mr. H. L. Chow, Mr. T. S. Chang, Mr. Y. N. Koo, Managing-Directors; Messrs. S. T. Chen and F. S. Chiang, Supervisors.

Officers of the Shanghai Office: Mr. C. S. Shen, Manager; Mr. C. C. Hsu, Mr C. M. Yang, Vice-Managers; Mr. V. J. Feng, Chief of the Business Department.

The Chekiang Industrial Bank, Ltd.—

Head Office: Hankow.

Branch Offices: Haimen, Chekiang; Lanchee, Chekiang; Shanghai.

Authorized Capital ... ... $ 1,000,000
Paid-up Capital ... ... $ 710,300
Reserved Fund ... ... $ 70,000
Founded, 1909.

Officers of the Shanghai Office: Mr. F. S. Li, Manager; Messrs. T. S. Chun and M. C. Shia, Assistant Managers.

Shanghai Office: 39 Peking Road.

The Shanghai Commercial and Savings Bank—

Head Office: Shanghai (9 Ningpo Road).

Branch Offices: Soochow, Wusih, Shanghai (15 North Szechuen Road).

Agents: Changchow, Nanking, Pengpu, Nantungchow, Nishien, Linweikwan, Hankow, Tsinan.

Authorized Capital ... ... $ 1,000,000
Paid-up Capital ... ... $ 1,000,000
Reserved Fund ... ... $ 96,000
Founded, 1915.

Officers of the Head Office: Messrs. L. Chong, E. C. Ling, H. S. Kung, C. Chang, H. T. Chen, Chang Chien, K. Chow, S. T. Woo, T. Yang, A. Tsai, M. Li, Directors. Mr. H. T. Chen, General Manager; Messrs. T. F. Yang, C. C. Chu and S. M. Tang, Assistant Managers

Salt Industrial Bank—

Head Office: Peking.

Branch Offices: Tientsin, Shachachong, Sinyanchow, Hankow, Nanking, Yanchow, Hongkong, Hangchow, Shanghai (10 Peking Road).

Authorized Capital ... ... $ 5,000,000
Paid-up Capital ... ... $ 3,500,000
Reserved Fund ... ... $ 1,600,000
Founded, 1914.

Officers of the Shanghai Branch: Mr. Y. F. Nieh, Manager; Y. C. Yang, Vice-Manager.

Chung Foo Union Bank—

Head Office: Tientsin.

Branch Offices: Hankow, Peking, Shanghai (441 Ningpo Road).

Authorized Capital ... ... $ 2,000,000
Paid-up Capital ... ... $ 1,500,000
Reserved Fund ... ... $ 124,000
Founded, 1915.

Officers of the Shanghai Branch: Mr. C. S. Sun, Manager; Mr. C. T. Shia, Vice-Manager.

Young Brothers' Banking Corporation—

Head Office: Chungking, Szechuan Province.

Branch Offices: Shanghai, Chengtu, Fanyuen, Ichang, Shotze, Hankow, Tientsin, Peking.

Authorized Capital ... ... $ 1,000,000
Paid-up Capital ... ... $ 1,000,000
Reserved Fund ... ... $ 300,000
Founded, 1913.

Officers of the Shanghai Branch: Mr. S. W. Keh, Manager; Messrs. Y. F. Chow and K. T. Chiang, Vice-Managers.

Shanghai Office: 4267 Honan Road.

Ningpo Commercial Bank—

Head Office: Shanghai (corner of Ningpo and Kiangsi Roads).

Branch Offices: Ningpo, Wenchow, Hankow.

Authorized Capital ... ... Tls. 1,500,000
Paid-up Capital ... ... Tls. 649,825
Reserved Fund ... ... Tls. 77,387
Founded, 1908.

Officers of the Shanghai Office: Mr. H. F. Sun, General Manager; Messrs. N. H. Chen and S. L. Hsu, Managers.

Chung Hua Commercial & Saving Bank (U38 Peking Road, Shanghai)—

Head Office: Shanghai.

Authorized Capital ... ... $ 250,000 (paid up fully)
Founded, 1912.

Officers of the Head Office: Mr. S. F. Kong, Manager; Mr. T. S. Yao, Vice-Manager.

The Bank of Canton, Ltd. (2 Ningpo Road, Shanghai).

Head Office: Hongkong.

Branch Offices: Canton, Siam, Shanghai.

Authorized Capital ... ... £ 1,000,000
Paid-up Capital ... ... £ 697,340
Founded, 1912.

Officers of the Shanghai Branch: Mr. S. C. Wang, Manager.

King Chen Banking Corporation (476 Nanking Road, Shanghai)—

Head Office: Tientsin.

Branch Offices: Peking, Hankow, Pengpu, Shanghai.

Authorized Capital ... ... $ 5,000,000
Paid-up Capital ... ... $ 3,500,000
Reserved Fund ... ... $ 200,000
Founded, 1917.

Officers of the Shanghai Branch: Mr. S. Y. Tien, Manager; Mr. Y. C. Woo, Assistant Manager.

Sin Hua Savings Bank (Tientsin Road, Shanghai)—

Head Office: Peking.

Branch Offices: Shanghai, Tientsin.

Authorized Capital ... ... $ 5,000,000
Paid-up Capital ... ... $ 1,250,000
Reserved Fund ... ... $ 453,000
Founded, 1914.

Officers of the Shanghai Branch: Mr. K. H. Ling, Manager; Mr. L. S. Chen, Chief of the Business Department.

Commercial Bank of China—

Head Office: 6 The Bund, Shanghai.

Authorized Capital ... ...Tls. 5,000,000
Paid-up Capital ... ...Tls. 2,500,000
Reserved Fund ... ...Tls. 1,245,000
Founded, 1897.

Officers of the Head Office: Mr. S. A. Fu, Manager.

Kiangsu Bank—
Head Office: 51 Kiangsi Road, Shanghai.
Branch Offices: Nanking, Soochow, Wusih, Chinkiang, Tungchow.

Authorized Capital	$ 600,000
Paid-up Capital	$ 600,000
Reserved Fund	$ 197,000

Founded, 1912.

Officers of the Head Office: Mr. M. H. Pan, General Manager; Mr. W. Y. Chang, Manager.

Wah Foo Commercial Bank (151 Nanking Road, Shanghai)—
Head Office: Hangchow.
Branch Offices: Peking, Soochow, Huchow, Shanghai.

Authorized Capital	$ 1,000,000
Paid-up Capital	$ 400,000

Founded, 1917.

Officers of the Shanghai Branch: Mr. N. C. Hung, Manager; Messrs. C. F. Hsu and C. T. Feng, Vice-Managers.

Yung Hung Banking Corporation—
Head Office: 440 Ningpo Road, Shanghai.

Authorized Capital	$ 500,000
Paid-up Capital	$ 250,000
Reserved Fund	$ 50,000

Founded, 1918.

Officers of the Head Office: Mr. S. T. Sze, General Manager; Mr. H. T. Yang, Manager; Mr. P. C. Hsu, Vice-Manager.

Tung Lai Bank (1271 Peking Road, Shanghai)—
Head Office: Tsingtao.
Branch Offices: Tsinan, Tientsin, Dairen, Shanghai.

Authorized Capital	$ 200,000
Paid-up Capital	$ 200,000
Reserved Fund	$ 87,000

Founded, 1918.

Officers of the Shanghai Branch: Mr. W. S. Woo, Manager; Mr. T. H. Wang, Chief of the Business Department.

Tung Lu Bank—
Head Office: Peking.
Branch Office: Nanking Road, Shanghai.

Authorized Capital	$ 2,000,000
Paid-up Capital	$ 2,000,000
Reserved Fund	$ 699,000

Founded, 1919.

Officers of the Shanghai Branch: Mr. C. P. Fong, Manager; Mr. T. N. Ling, Vice-Manager; Mr. S. L. Chen, Chief of the Business Department.

The Continental Bank (Peking Road, Shanghai)—
Head Office: Tientsin.
Branch Offices: Peking, Shanghai.

Authorized Capital	$ 2,000,000
Paid-up Capital	$ 1,000,000
Reserved Fund	$ 97,857

Founded, 1918.

Officers of the Shanghai Branch: Mr. W. S. Yih, Manager; Mr. P. C. Shar, Assistant Manager.

The Bank of East Asia, Ltd.—
Head Office: Hongkong.
Branch Office: 31 The Bund, Shanghai.

Authorized Capital	$ 2,000,000
Paid-up Capital	$ 2,000,000
Reserved Fund	$ 500,000

Founded, 1918.

Officers of the Shanghai Branch: Mr. T. F. Li, Manager; Mr. L. C. Chen, Vice-Manager.

The National Industrial Bank of China (519 Tientsin Road, Shanghai)—
Head Office: Tientsin.
Branch Offices: Peking, Tsinan, Shanghai.

Authorized Capital	$20,000,000
Paid-up Capital	$ 2,223,600
Reserved Fund	$ 46,678

Founded, 1919.

Officers of the Shanghai Branch: Mr. T. T. Liu, Manager; Mr. A. T. New, Vice-Manager; Mr. L. Y. King, Chief of the Business Department.

The Chinese Merchants' Bank—
Head Office: 41 Nanking Road, Shanghai.

Authorized Capital	$ 500,000
Paid-up Capital	$ 200,000

Founded, 1920.

Officers: Mr. Y. S. Tung, Manager; Messrs. F. C. Shu and T. H. Shu, Assistant Managers.

The Hua Foong Bank, Ltd.—
Head Office: 38 Nanking Road, Shanghai.

Authorized Capital	$ 600,000
Paid-up Capital	$ 205,000

Founded, 1920.

Officers: Mr. C. C. Shu, Manager; Mr. S. S. Fan, Vice-Manager.

Chin Foong Banking Corporation—
Head Office; 40 Peking Road, Shanghai.

Authorized Capital	...Tls. 200,000

Officers: Mr. S. H. Chen, Manager; Mr. Y. C. Fu, Vice-Manager.

The Tsung Lee Bank—
Head Office: Chinese City, Shanghai.

Authorized Capital	$ 100,000
Paid-up Capital	$ 100,000

Founded, 1920.

Officers: Mr. P. L. Wang, Manager; Mr. C. J. Chu, Vice-Manager.

Dah Foong Savins Bank, Ltd.—
Head Office: Chinese City, Shanghai.

Authorized Capital	$ 100,000

Founded, 1910.

Officer: Mr. L. F. Cho, Manager.

Foong Dah Commercial Savings Bank—
Head Office: Tsinan.
Branch Office: 490 Nanking Road, Shanghai.

Authorized Capital	$ 1,000,000
Paid-up Capital	$ 250,000

Founded, 1919.

Officers: Mr. K. M. Koo, Manager; Mr. K. S. Yuan, Vice-Manager.

Ho Hai Industrial Bank—
Head Office: 468 Tientsin Road, Shanghai.
Branch Office: Haimen, Kiangsu Province.

Capital	$ 500,000

Founded on April 21st, 1921.

Officer: Mr. C. P. Loh, General Manager.

Ming Sin Bank—
Head Office: 183 Honan Road, Shanghai.

Authorized Capital	$ 1,500,000
Paid-up Capital	$ 375,000

Founded, 1921.

Officers: Mr. C. T. Feng, Manager; Mr. S. Y. Feng, Assistant Manager.

Wei Hai Bank (before April, 1921, it was known as Wei Hai Industrial Bank)—
Head Office: Nantungchow.
Branches: Soochow; Chinkiang; Yangchow; Funien; Tungkei; Haimen; Tangsha; 22 Kiukiang Road, Shanghai.

Authorized Capital	$ 5,000,000
Paid-up Capital	$ 1,250,000

Founded, 1920.

Officers of the Shanghai Branch: Mr. J. S. Yang, Manager; Messrs. C. Chu and F. H. Chen, Assistant Managers.

Soochow Bank—
Shanghai Office: 75 Nanking Road.

Authorized Capital	$ 500,000
Paid-up Capital	$ 125,000

Officer: Mr. C. C. Sun, Manager.

Hua Dah Commercial and Saving Bank—
Head Office: Ming Kuo Road, Shanghai.

Authorized Capital	$ 1,000,000
Paid-up Capital	$ 500,000

Officers: Mr. S. Y. Koo, General Manager; Mr. C. C. Chang, Manager.

Foong Dah Commercial and Saving Bank—
Head Office: 490 Nanking Road, Shanghai.

Authorized Capital	$ 1,000,000
Paid-up Capital	$ 500,000
Reserved Fund	$ 30,000

SINO-FOREIGN BANKS IN SHANGHAI

Russo-Asiatic Bank.
Banque Industrielle de Chine.
Exchange Bank of China (Sino-Japanese Corporation).
Head Office: Peking.
Branch Office: 41 Kiangsi Road, Shanghai.

Authorized Capital	Y. 10,000,000
Paid-up Capital	Y. 5,000,000
Reserved Fund	Y. 650,000

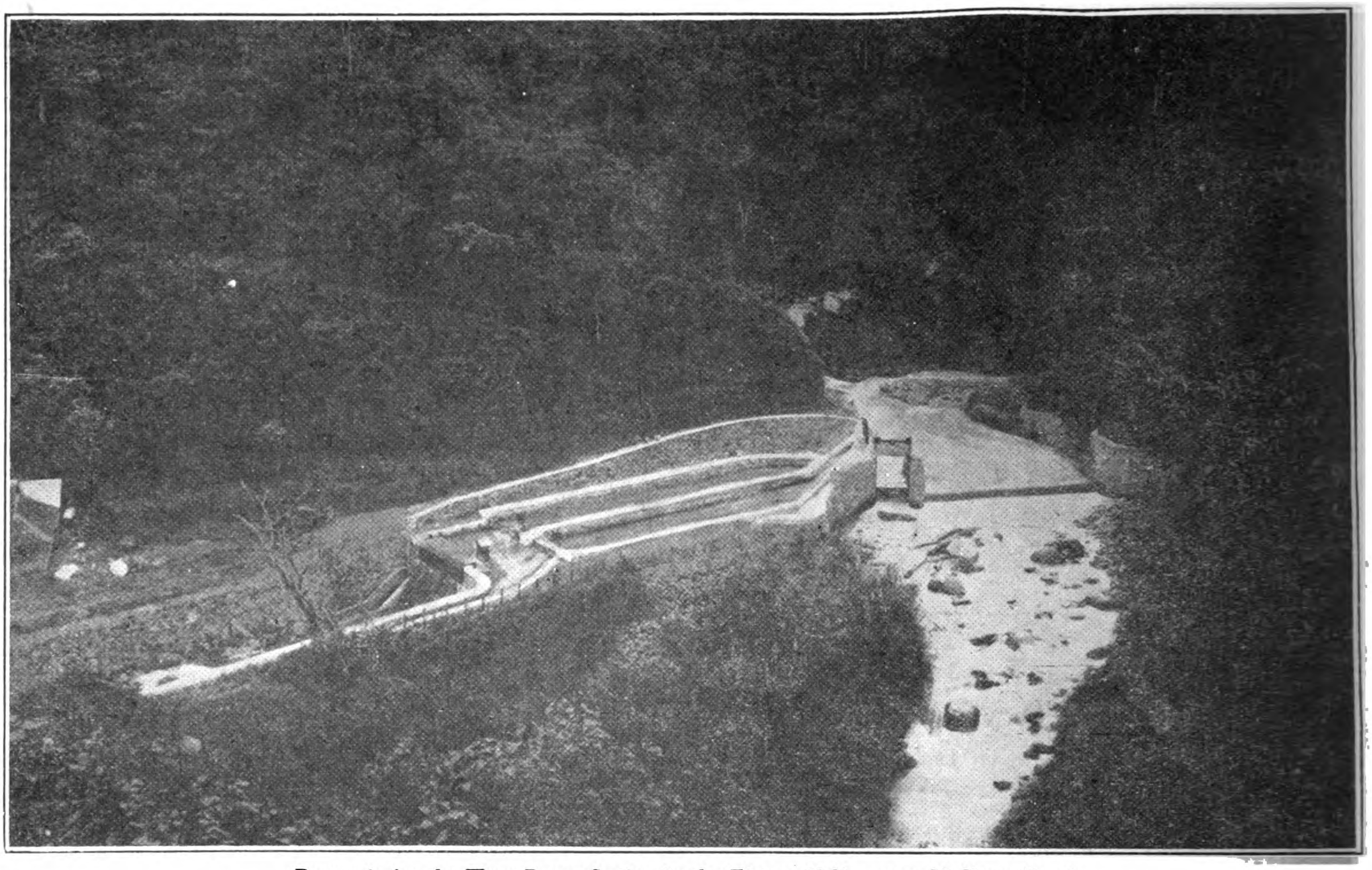
Founded, 1918.

The Chinese-American Bank of Commerce—
Head Office: Peking

Authorized Capital ... ...U.S.	$10,000,000
Paid-up Capital ... ...U.S.	$ 5,000,000

Shanghai Branch: 11 Nanking Road.

Officers of the Shanghai Branch: Mr. H. A. Allen, Manager; Messrs. Louis Shen and Sooyii K. Shen, Assistant Managers.



Reservoir for the Water-Power Station in the Tjatoer Valley. near Madioen (Java)

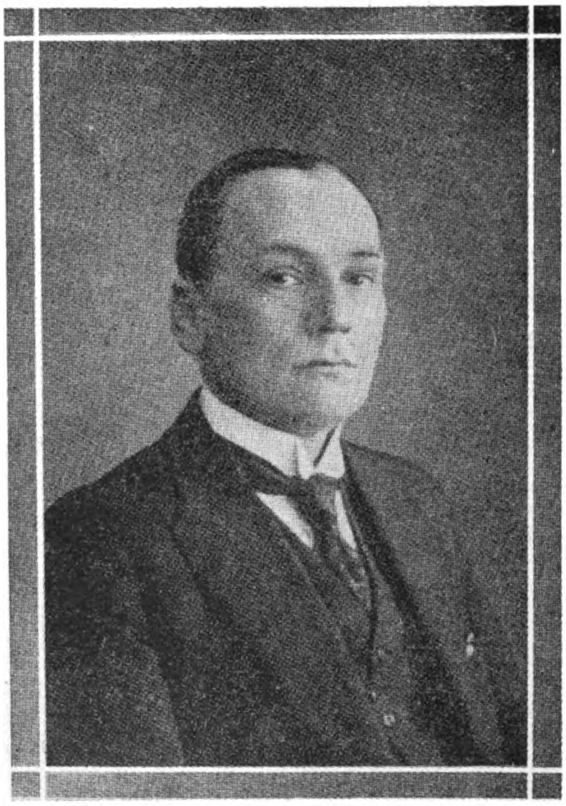
Hydro-Electric Plants in the N.E.I.

SINCE 1910 the waterpower problem has been studied by the government, originally merely for the sake of electrifying the state railways, but later on a wider basis in the interest of a better supply of energy as an important factor to the industrial development of the country.

The service for waterpower and electricity is an independent subdivision of the department of government enterprises. To this new service is assigned the task of "effectually promoting an economical supply ef energy to the districts, which come under consideration therefor, making efficient use of the country's waterpower for the industrial development of these colonies in general and for that of the state railways and other government industries in particular."

To attain this purpose the service for waterpower and electricity has charge of :

(a) the systematic investigation and exploration of valuable waterpower in those regions, where most ueed will be felt for this source of power ;



P. A. Roelofsen, C.E.
Chief of the Government Hydro-Electric Service and Director of Public Works

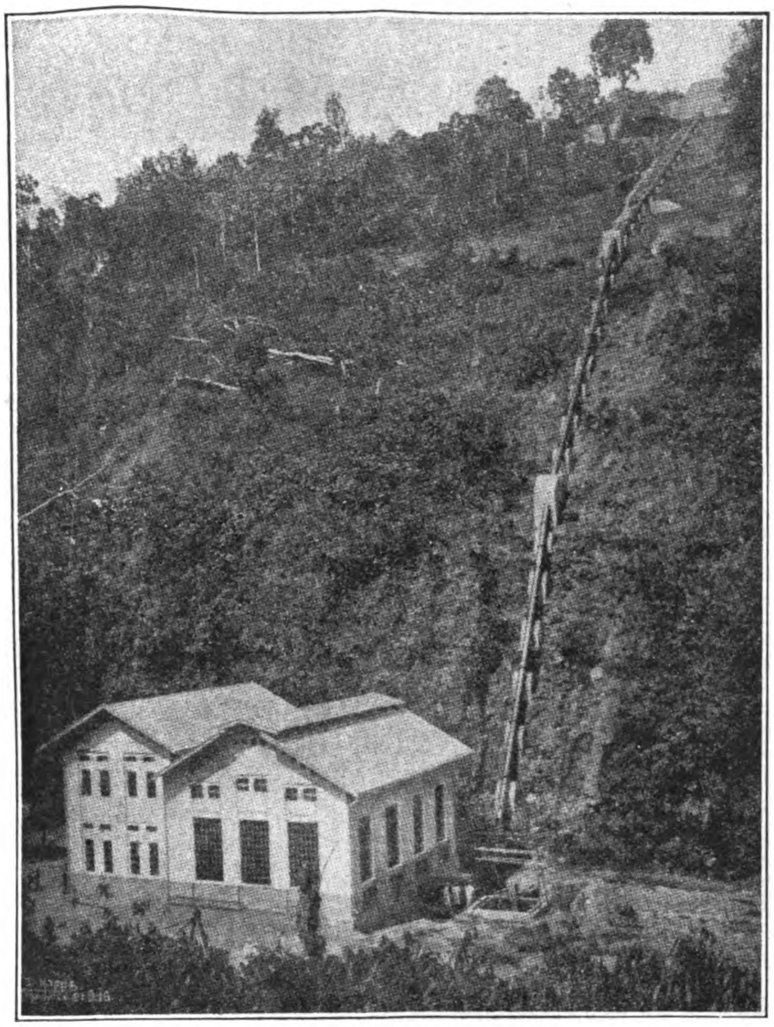
(b) taking an inventory of the waterpower discovered and giving information to those interested;

(c) the promoting of the economical use of the great sources of power which are to be made available and the prevention of waste in the country's valuable sources of energy ;

(d) the promoting of an economical and systematic provision for the need of electrical energy and the giving of information to those interested ;

(e) the supporting and establishing of powerful electrical industries in regions, where valuable sources of power are at hand and where there is need for electrical energy, among other things by furnishing technical data and information and also by making tests and technical researches in the electro-industrial field or for the promotion of waterpower works in general ;

(f) the making up of budgets and plans, and, where necessary, the supervision of the construction of waterpower works and other im-



The Tjatoer Hydro-Electric Power House, Java

portant works in the electro-technical field, for the department of government industries or, if desired for other departments, for provinces and communities. This includes, also, the plans for the electrification of the railways and the reservation of the waterpower especially adapted for this purpose, besides making a stndy of the way in which provision may be made for the future need ef electricity, in so far as this cannot be supplied by waterpower;

(*g*) the handling of matters, concerning concessions for waterpower and licenses for the construction and the use of conducting wires for electric lighting and the transmission of power by means of electricity, besides seeing that the regulations referring to these concessions and licenses are carried out.

In order to make a practical division of the above task, the service has besides an administrative division, three technical departments, namely the hydro-technical, the electro-technical and the construction department, all of which are established at Bandoong. Twenty engineers are active in the service.

The department of electricity does all work of an electrical mechanical nature. This department also gives advice, particularly to local resorts, regarding subjects, which belong to its line of activity. It carries out, according to the principles, adopted by the government, the "electricity policy," the object of which is to lead up to the supplying of electrical energy in the Dutch East-Indies in as rational a way as possible, and in this connection handles all incoming requests for licenses to establish local electrical industries.

It is the task of the department of construction to carry out all work to be done by the service.

The hydro-technical department has charge of all remaining activities. In the first place the systematic research for waterpower, by the studying of maps as well as by field exploration and water gauging. For this purpose water observation posts have been established in rivers and lakes, to the number of 30 in Java and 10 in the outlying possessions (Sumatra and Celebes), which posts are being continually increased. Many of these posts are provided with self-registering level-gauges. The water gauging is done with electrical gauge instruments. The figures obtained daily will be regularly published as a sub-division of the so-called waterpower cadastre. In this cadastre will also be included all data regarding location and power of waterpower sources, those which have not yet been utilized as well as those which are already partly or entirely in use. Waterpower concessions and licenses already granted will also be registered in this cadastre. This waterpower cadastre is open to the public; private individuals wishing to make use of waterpower may learn beforehand what is already known concerning the rivers or aqueducts which they have in view.

The force of the waterpower located by the government in Java, Sumatra and Celebes, which come iuto consideration for registration in the cadastre, may already be estimated at more than 1,500,000 H.P.

Regarding the works completed by the service for waterpower and electricity, projects being carried out and plans in consideration, the following may be told :—

Two completed waterpower works have already been put to active use, i.e., the state powerhouse in the Tjatoer Valley for the use of the state railway workshops in Madioen, which has produced excellent results since 1917, and a small powerhouse south of Bandoong which since 1918 has served for the wireless station at that place.

A waterpower work to supply the government gold mines and the private mines at Redjang Lebong with energy is almost completed on the Ketahoen River near Lake Tais in Benkoolen.

The powerhouse Tjatoer near Madioen has two turbines of 1,000 H.P. each, working under a water pressure height of 110 M. The supply aqueduct has a total length of 2,200 M. from the water reserve to the pipe conductors of the turbines, in which are two tunnels respectively 240 and 360 M. long. The electrical energy is transmitted under a pressure of 25,000 volts along an air conductor on iron masts to the sub-station at Madioen.

The waterpower station at Lake Tais in Benkoolen is at present provided with two turbines of 1,000 H.P. each, working under 50 M. water pressure.

The small waterpower installation for the wireless station near Bandoong has a power of about 200 H.P. A second waterpower work for the wireless station, of ± 350 H.P., is almost completed.

There are also in course of construction in Java two waterpower works, i.e., on the Tji Anten and Tji Tjatih for the railway and to supply energy to the residency of Batavia and West Preanger, besides two works on the Tji Saroewa for purpose of supplying hydro-electrical energy to the mountain plateau of Bandoong.

The power to be installed in these four stations will amount to about 40,000 H.P. (on the turbine axle). Of this 28,000 H.P. will go to the station at Tji Anten, for the purpose of taking up the considerable variation of load of the electric railways in and around Batavia.

The new waterpower work of 3,000 H.P. on the Tji Kapoendoeng, will replace the old Dago station of the Bandoong Electricity Company, which will be taken over by the state and held in reserve.

A vigorous continuance of the government's exploration of great waterpowers in the outlying possessions is necessary to determine before long the industrial possibilities in connection with powerful and cheap waterpower, particularly in the field of the so-called nitrogen industry.

FAR EASTERN IRON AND STEEL

A MACHINERY AND IRON BUSINESS, JAPAN.—With offices at 13 Itchome Shibagochi, Shiba-ku, Tokyo in the charge of Taigo Hattori, Hattori Taigo & Company will operate in iron tubes, iron supplies and machinery.

* * *

BLAST FURNACES IN SUMATRA.—The blast furnaces at Tandjong Karang (South Sumatra) now work regularly and furnish a splendid quality of iron. Batavia and Sourabaya experts praise highly the results.

The drydocks in the two ports employ this metal regularly.

* * *

IRON IMPORT INCREASE, JAPAN.—Though the reduction in the output of iron is still being enforced the iron market remains dull and pig iron is now quoted at from Yen 70 to 80, while the highest quotation during war time was Yen 500. Nevertheless the import of iron ore has been steadily on the increase. According to a report to hand, the amount imported during 1920 stood at 11,039,466 piculs valued at Yen 14,896,520, an increase of over 13 million yen as compared with 1912. We give below the amount and value of iron ore imported during the past nine years :—

	Volume (In 1,000 piculs)	Value (In Yen 1,000)
1912	3,307	1,178
1913	4,670	1,585
1914	4,987	1,725
1915	5,152	1,812
1916	4,669	1,671
1917	4,954	2,455
1918	6,015	9,673
1919	10,351	16,138
1920	11,039	14,896

* * *

MANUFACTURE OF CRUCIBLE STEEL IN JAVA.—The Russian engineer Menschich, employed with the N. I. State Railways, has constructed an oven which has been taken in use.

This oven has been constructed in order to make crucible steel out of all sorts of scraps and waste of iron and steel. It is heated by means of liquid fuel (residue). The heat is so strong that steel scraps can easily be melted and leaves the oven with sufficient temperature to furnish fine castings.

It is certainly of a great value to be able to make useful toolsteel out of scraps and waste, such in a country where there are no big steelworks at hand, who turn steelwaste into toolsteel by means of the Siemens Martin process.

Mr. Menschich has earned the sincere thanks of all who wish for the wellfare of Holland's East India. Such men are wanted for the Islands.

* * *

HASHIMOTO TUBE MANUFACTURING CO. : organized to manufacture steel tubes. Office, 17 Sanchoma Senju, Tokyo. Manager : K. Hashimoto.

* * *

STEEL MAKING BY THE SOUTH MANCHURIAN RAILWAY.—It is said that the South Manchurian Railway has under contemplation a scheme for the production of iron and steel on a large scale, in addition to pig iron, which it is manufacturing now. Its daily output of pig iron amounts to some 300 tons, and it has in stock about 50,000 tons.

* * *

IRON INDUSTRY DEPRESSED.—The iron industry in Japan still remains dull. The Tokyo and four other iron foundries some time ago received a sum of Y.9,000,000 from the government sa a subsidy and with the money they managed to tide over the difficult situation and maintain business, but owing to slack demand the stock has accumulated, and they are short of funds.

The Kenjiho and Penchihu iron foundries may, however, be able to obtain the necessary funds from the Mitsubishi and Okura companies respectively in view of their close connection with those establishments. The Toyo iron foundry has recently called the second installment of shares amounting to Y.4,000,000 and managed to raise the required fund, and the Tanaka iron mine has also resorted to a temporary loan to meet their immediate requirement.

One measure of relief is believed to be a combine. The plan of which is before the economic and financial committee. The plan to establish a common selling guild among a few large iron establishments including the Toyo, Tanaka, Penchihu and Mitsubishi concerns has not yet reached maturity, though negotiations are still going on.

THE YAWATA STEEL WORKS IN JAPAN.—A long account of the government steel works at Yawata (Kyushu) in Japan has been received in the department of overseas trade from the commercial counsellor of the British embassy, Tokyo. The town where the works is situated has gradually expanded until it now contains a population of over 100,000, about 20,000 of whom are employed in the steelworks, which supply one-third of the quantity of steel on demand in Japan. Over 60 per cent. of the ore used is imported from China. In 1899, when the works opened, they made a small profit only, and for the subsequent ten years there were continued losses. It was only in 1910 that the tide turned. In the three years, 1916-1918, the profits aggregate Yen 133,940,000 (say, £13,400,000), which left a surplus of nearly £5,800,000, after building and other costs up to 1918 had been deducted. The quantity and value of steel in 1917 was 297,000 tons, and in 1918 310,000 tons. The production of pig-iron has declined from 302,000 tons in 1916 (the highest point of production, to 269,000 in 1918 and in 1919. On the other hand, the output of steel has increased from 282,000 tons in 1916 to 437,000 tons in 1919. The present full capacity of the works for the production of steel is about 700,000 tons; but when the extensions now in hand are completed the actual annual production will probably be 750,000 tons. Of the pig-iron for making this 750,000 tons, the management propose to make two-thirds themselves and get the remaining third from outside. In this way some 1,000,000 tons of ore will be required. The ore required for 1919 was estimated at 860,000 tons, of which they intended to get 550,000 tons from China and 310,000 tons from Korea and Japan, but the expected quantity not having been obtained, pig-iron was produced only to the extent of about 270,000 tons. The principal source of ore for the works is Tayeh, China, but the works own two mines in the Hwanghai Province, Korea, and have recently acquired two mining concessions in Echigo. There is also some difficulty about the coke. The quantity of coal now consumed at Yawata, both as fuel and for converting into coke, is 1,690,000 tons, of which about 700,000 tons are supplied from the Futase Colliery belonging to the works. After prolonged experiments they have succeeded in making moderately good coke from coals from various sources. On the completion of the extensions now in hand it is estimated that 1,000,000 tons of good coal will be required annually for coke-making and 1,500,000 tons for fuel. The number of workers employed is 22,853 (exclusive of officials). The average wages of workmen are about Yen 55 (about £5 12s. 3d.) per month, and those of coolies (including women and youths) are Yen 1.54 (about 3s. 2d) per day. As a result of the strikers last spring the works has adopted an eight-hour day.

* * *

KAILAN IRONWORKS.—The Kailan Mining Administration is reported to have decided to establish a big ironworks in Chinhuantao with a capital of $15,000,000. The site covers 30 square miles and reported to have decided to establish a big ironworks in Chinhuantao with the output is estimated at 2,500,000 tons of pig-iron per year. In this connection, a contract for the raw materials has already been concluded with the Pinghsiang Iron Minnig Co. in the Yangtze Valley.

* * *

THE IRON SITUATION IN JAPAN.—Mr. J. Takebe, superintendent of the South Manchuria Railway Company's Coal Sales Office, who has returned from a tour of Tokyo, Osaka, and Kyushu, has commented upon the iron situation to the following effect :—

The shipbuilding-yard has sunk to the bottom of depression, and a semblance of activity is kept up merely by the pursuance of the so-called "Eight Dreadnaught and Eight Cruisers" plan. Such materials as are required for the manufacture of warships appearing limited to a specified list, this does not seem to affect the general market at all.

Nowadays, iron price is quoted at between Y.60-Y.70, whilst the production cost is high as Y.100.

The iron works management is cutting down the iron outputs barely within keeping up the fire in the grate of the blast furnaces. It will have to play the waiting game.

On the other hand, the first gleam of the returning day has appeared over the economic horizon, and the goods under storage are being cleared at the rate of nearly 10 per cent. It may be that the night of business depression is on the wear and far spent.

For these reasons the market for the iron produced at the Anzan Iron and Steel Works will prove difficult to exploit.

* * *

STEEL WORKS PLANNED FOR YANGTZE PORT.—It is learned that the military governor of Hupeh province has filed with the ministry of agriculture and commerce plans for the erection of a large blast furnace at Huangshihkang port on the Yangtze River, a few miles below Hankow and Hanyang. These furnaces are intended to handle ores of the Hsiang-pishan iron mines in the vicinity, which are said to be of excellent quality and capable of being worked into the highest grade of steel.

Engineering, Financial, Industrial and Commercial News

AUTOMOBILES

Automobiles, Tsingtau.—Vice-Consul Allman calls attention to the fact that Tsingtau has perhaps the best roads of any city in the Far East, and is therefore well adapted to the use of motor cars. The main streets in the city are asphalted and the other streets and roads in the immediate district are macadamized. The road construction under way in the Shantung province will also create a greater demand for cars, probably of the cheaper-grade passenger cars and motor trucks. At present Shanghai supplies the Tsingtau district with motor cars and accessories, but the local agents and garages are dissatisfied with this source of supply because of the uncertainty of getting cars and supplies when needed.

Kwangteh-Szean Automobile Road.—Construction of an automobile road between Szean, Chekiang, and Kwangteh, Anhuei, a distance of about 45 miles, has been started by the local merchants. At the last conference of the promoters, an agreement was reached that the work will cover the building of a new road from Szean to Chiapa and the repairing of the old main road from Chiapa. to Kwangteh (all to be 15-ft. wide, and 25-ft. where automobiles should meet) at an estimated cost of $300,000, including the cost of building bridges and purchasing automobiles. Three automobiles for carrying passengers and seven for freight purposes will run a regular service along this line, 8 times a day. A net annual profit of more than $100.000 is expected to be made when this automobile transportation service is established.

Shanghai-Taitsang Motor Truck Service.—The ministry of agriculture and commerce has approved of the scheme formulated by Tang Wen-chih for a motor truck service between Chapei and its terminus Liuho, Taitsang.

AVIATION

Tokyo-Fusan Service.—The establishment of regular aerial transport between Tokyo and Fusan is contemplated within the present year. A company with a capital of Y.10,000,000 is to be formed. It is the intention to extend the service subsequently to Manchurian centres.

Straits Air Service.—An air-service company is being floated in the Straits Settlements by Chinese. Mr. Tan Choo Boon, B.A., a military aviator recently arrived in Peking from Manila in connection with the project. A service between the Straits Settlements, the Philippines and China is contemplated. The Chinese chambers of commerce. Manila and Singapore are supporting the enterprise.

Invents Hydro-Plane.—The Hochi says that Mr. Cho, a director of the Nihom Kaijo-soko Kabushikigaisha has invented a new hydro-plean similiar to the more modern types in western countries. It has a cabin capacity of 50 persons and can also carry enough gasoline for a 3,000-mile flight. Its speed is said to be 100 miles an hour.

Airship for Japan.—The *Pall Mall Gazette* says: "In addition to quantities or armorplate, projectiles and submarine engines now in hand, Vickers are building an airship of the Scout type for the Japanese navy, and the Whitehead Torpedo Factory at Wyke, Dorset, is filling an order for torpedoes for the same service.

These, however, exhaust the list of contracts which are being executed for Japanese naval material, and so far, at any rate, there is no sign of the big battle cruiser order which was rumored to be imminent some weeks ago.

British Aviators for Japan.—When the next group of British naval aviators arrive in Japan in June the Kasumigaura airdrome will be completed and ready for use, if plans of the naval authorities here are carried out. All capital ships of the imperial navy will be provided with one or two airplanes when the airplane tender Hosho, 9,500 tons, is completed at the end of 1922.

The model deck and sliding platform of the Kasumigaura naval airdrome are already completed and the first class of Japanese students to be trained there will consist of 20 members. These will be under the instruction of the newly arrived British aviators.

New Aviation Schools, Japan.—The Shimashizu branch aviation school was opened April 1st at Chiyoda-mura, Chiba prefecture. The Akeno school at Kitahama-mura, Miye Prefecture, was also opened the same day.

BRIDGES

Yellow River Bridge Tenders.—The Government has been advised that the Belgian engineer engaged for the Yellow River Bridge commission cannot arrive in China before the end of June, and it is suggested that the date for the opening of the tenders for the reconstruction of the said bridge should be postponed to the 31st July. This suggestion is under consideration by the ministry of communications. At the reqnest of the Japanese legation, a Japanese railway engineer will be appointed to the commission of Anglo-French-Belgian-Chinese engineers. Dr. Wellington Koo, minister to London, reports that he has engaged a technical expert to report upon the Yellow River Bridge.

Hangchow Railway Bridge.—It is reported that the work on the railway bridge across the Chao-o River, which was being built by a German firm and stopped during the war, is now to be given to a British firm.

BUILDINGS

Memorial Laboratory, Tokyo.—A magnificens structure extending over 300 *tsubo* and costing approximately Y.300,000 will be established at a laboratory of the Juntendo Hospital in commemoration of Dr. Sato's contribution to the medical sciences in Japan, says the Chugai Shogyo.

New Hotel. Tokyo.—The plans call for an expenditure of at least 20 million yen.

"Plans are well under way," to erect a new hotel in front of the Tokyo Station by the Asano interests. There will be 800 rooms capable of accommodating 2,000 guests.

Huge Building Scheme, Manila.—The Manila authorities have formulated a plan for the construction of modern houses, to be financed by the city and later paid for by tenants in long-time instalments. The plan will be the biggest step in bringing an eastern city to modern lines that has ever been undertaken. With 20 blocks to be rebuilt, covering an area of 30 acres, comprising more than 700 homes, an idea of the extent of the work may be gathered.

Tientsin Exchange.—Some Japanese business men in Tokyo and Osaka are taking steps to erect an exchange at Tientsin with a capital of Y.7,500,000.

Y.M.C.A. Building, Soochow.—Tke completion of the Y.M.C.A. building at Soochow has been delayed, as additional buildings are to be erected out of a contribution of $5,000 Gold contributed by Mr. Crane, American minister to China.

New Schools, Japan.—The department of education will build the following schools during the current year: Middle schools, 18; engineering, 9; agricultural, 29; commercial, 13; mercantile marine, 1.

Meiji Shrine Plans, Tokyo.—Work on the outer garden of the Meiji Shrine in Tokyo was commenced in April and it is hoped by 1924 the museum, race course and memorial buildings will be completed.

New Government Buildings, Osaka.—It has been decided to erect the governors' official residence with two other buildings in a suburb of Osaka on a plot of land 3,000 *tsubo* in extent. The buildings are to cost Yen 250,000.

ELECTRICITY

Musashi Electric Tramway, Japan.—A company formed for the construction and operation of a new electric line from Tokyo to Yokohama, running approximately a mile and a half inland from the present railroad, has been formed. The Musashi Electric Tramway Company, as the newly organized firm is called, will also furnish electricity to the villages along the route. The Tokyo terminu- will be at Meguro and at Yokohama, Takashimas cho.

A Scheme to make Chapei independent of the municipal electricity department and Shanghai Waterworks is being considered.

A number of Chapei residents, under the leadership of ono Chin Wen-li, have petitioned the civil governor stating that as the present system is very unsatisfactory it is essential that a new and more satisfactory system should be introduced.

It is proposed that a new power plant be established by merchants with an initial capital of $300,000, and when capital increases telephone and water supply will be installed.

The Nagoya Electric Light Company has made a contract with the Inuyama Electric Light Company operating at Inuyama, Aichi prefecture, for amalgamation. This is believed to be part of the program of concentrating electric enterprises in and around Nagoya in one consolidated concern as contemplated by a group of business men.

Electric Light, Fukien.—Mr. Yang Yi-fen of Hinghwahsien, Fukien, has subscribed $15,000 to instal an electric light plant.

Electrical Equipment in Siam.—Bangkok is the only city in Siam furnished with electric light and power stations, of which there are two, the Siam Electricity Co. (Ltd.), and the Samsen Power Station. The former supplies light and power to the public generally throughout the city, while the latter is the municipal light and power station for Bangkok, also providing lighting for a large area occupied by royal palaces, and motive power for Bangkok water works, for the opium factory, and for the Siam cement works.

Owing to the fact that no electrical apparatus of any kind is manufactured in Siam, there is a demand for all classes of such goods, with the addition of specialties needed for a tropical country. Electric lighting sets of various makes and sizes are advertised in the local press, but the demand appears to be moderate and limited to the provinces. The import duty on all electrical goods is 3 per

cent. *ad valorem*. There are no other restrictions in this trade, and it is not required to have the country of origin stamped upon any articles sold in Siam.

There has hitherto been no development of hydroelectric power in Siam, and in years with normal rice crops paddy husk is used for fuel, owing to its cheapness and the fact that the cost of oil, coal and wood is comparatively high, as compared with neighboring countries.

Electric Plant for Peking Market.—The request of the Tungan market merchants to erect a electric light plant to supply the market exclusively, has been sanctioned by the police.

Peking-Tientsin Tramway Project.—A Tientsin merchant named Hsu Wen-pin has applied to the board of agriculture and commerce for sanction to organize operation of a company for an electric tramway between Peking and Tientsin, beside supplying power for factories in the province, the promoter purposing to generate the current by using the water force in the Yungtingho River, by erecting an electric plant at Huailai Hsien.

Electric Plant for Golden Sand.—It has been decided to instal an electric light and power plant at Golden Sand, a city located in the Nantungchow district, because of the increased business of the centre, says the *Shanghai Times*. A company has been formed with a capitalization of $25,000 and the machinery has been ordered from an American firm. The plant is expected to be in operation by the middle of April. The operating company is to be known as The Venus Company.

Moulmain in Burma is at present lighted by gas and its residents are agitating for the installation of an electric light plant. It is expected that tenders will be advertised in the near future.

Electric Plants, Russia.—There are to be built. in Soviet Russia (including the autonomous districts), 643 electric plants, of these 246 have already been completed in the rural regions.—*Dalta News Agency.*

A Sub-Electricity Plant, Nanking.—The installation of a branch electric phant in a suburb of Nanking was started in the winter of 1919 by the order of the civil governor of Kiangsu, under the management of Mr. S. N. Shu, principal of a technical school at Nanking, and is now approaching completion. The building is of reinforce concrete. The plant will have a capacity of 500 kilowatts more than the main plant in the city, capable of lighting 50,000 lamps.

Asahi Electric Bulb Company.—Organized to manufacture electric light bulbs. Office: 14 Shichome, Yedo-bori, Nishi-ku, Osaka. Manager: S. Yasumo.

Okamoto Shoten & Company.—Organized for the purpose of manufacturing electrical tools, etc. Office: Hichome, Kamihon-machi, Minami-ku, Osaka. Manager: H. Nasu.

New Electric Combine, Japan.—The Teikoku Dento Company (Imperial Electric Light) has amalgamated with the Gaibo and Toyokuni Electric Companies and later absorbed the Shimotsuke Electric Company, Ltd. It has been decided to increase the capital of the combine to Y.24,645,800.

Kushu Soden Electric Company, Ltd.—This company, recently organized in Tokyo, is to have a capital of Y.20,000,000.

New Tramway, Japan.—The Tobu Tramway Company, Ltd. will construct new lines from the Sugito station to Nikko via Saitama and Tochigi prefectures. The estimate of construction cost is Y.6,000,000 which will be provided for either by an increase of capital or by borrowing.

Electric Power Schemes, India.—The development of electric power schemes in the Punjab has made considerable progress. Lahore and Amritsar are provided with electricity. Rawalpindi, Multan and Lyallpur will follow. Negotiations are proceeding with regard to Jullundur, Sialkot and Gujranwala, and a scheme is under consideration for increasing the plant at Simla. In addition, a large scheme, estimated to cost one crore of rupees, has been initiated by three Indian gentlemen under the title of the Punjab Hydro-Electric and Industries Association, with headquarters at Delhi. It is proposed by this Association to develop electrical power on four canal falls and to join them together electrically so that power may be always available when any canal is closed.

Electric Light, Ipoh, F. M. S.—An electrical engineer specially engaged for this work arrived from England last December. Plans and specifications for two alternative schemes have been sent to the crown agents for reference to consulting engineers. A reply is now awaited. The electric lighting of Ipoh will be taken over by an electrical Board, which has recently been appointed to manage the government electric power supplies, including the Kuala Lumpur installation, and the preliminary works in connection with the proposed public power supply from the Perak valley.

ELECTRICAL DEVELOPMENT IN JAPAN

Plants in Seven Prefectures

Aichi Prefecture

Nagoya Electric Light Company, Ltd., Nagoya.
Okazaki Electric Light Company.
Toyahashi Electric Power Company.
Aichi Electric Tramway Company.
Bishu Gas & Electric Co.
Inszawa Electric Power Co.
Chita Gas & Electric Co.
Bishoku Electric Light Co.
Fukui Electric Light Co.
Asahi Electric Light Co.
Hirosaka Electric Power Co.
Ensan Electric Power Co.
One Lumber Mill.
Tawara-machi Electric Power Co.
Otokawa Electric Power Co.
Mikawa Lumber Mill.
Tamakawa Hydro-Electric Co.
Tosan Electric Power Co.
Shinoshima Electric Power Co.
Total 19 companies.

Nagano Prefecture

Ichigo Electric Power Co.
Nozawa Hot Springs Hydro-Electric Co.
Otami Electric Light Co.
Shinanao Electric Power Co.
Nagano Electric Light Co.
Aki Electric Power Co.
Matsumoto Electric Light Co.
Yamabe Electric Power Co.
Tochiku Electric Power Co.
Yakawa Hydro-Electric Co.
Suwa Electric Power Co.
Takatow Electric Light Co.
Nakazawa-mura Electric Power Co.
Ina Electric Tramway Co.
Electric Steel Works.
Yoshida Electric Light Co.
Ogawa Hydro-Electric Co.
Chuo Paper Mill.
Kiso Electric Power Co.
Wada Hydro-Electric Co.
Nanshin Electric Power Co.
Katsukai Hydro-Electric Co.
Neha Hydro-Electric Co.
Kawashima Electric Power Co.
Oyakawa Electric Power Co.
Mitsui ne-mura Electric Power Co.
Chikumagawa Hydro-Electric Co.
O-hyuga Electric Power Company.
. Total: 28 companies.

Gifu Prefecture

Gifu Electric Power Co.
Kajikawa Electric Power Co.
Itatorigawa Electric Power Co.
Mino Electric Tramway Co.
Ogaki Gas & Electric Co.
Okita Electric Power Co.
Dajimi Electric Light Co.
Tsumaki Electric Power Co.
Dachi-machi Electric Power Co.
Akechi-machi Electric Power Co.
Yaozu-machi Electric Power Co.
Kajita-mura Electric Power Co.
Kashibo-mura Electric Power Co.
Kiso Electric Power Co.
Nokatsu Electric Power Co.
Iwamura Electric Power Co.
Shirakawa Hydro-Electric Co.
Samigawa Hydro-Electric Co.
Kurino Hydro-Electric Co.
Yawata Hydro-Electric Co.
Shiratori Electric Power Co.
Hida Electric Light Co.
Funatsu Electric Light Co.
Kunogawa Hydro-Electric Co.
Ibisu Mine Works.
Tono Electric Power Co.
Sakauchi Electric Light Co.
Kaminohogawa Hydro-Electric Co.
Toki Hydro-Electric Co.
Aki Electric Power Co.
Tsuruoka Electric Power Co.
Mino Electric Power Co.
Suwara-mura Power Co.
Fuchu-mura Power Co.
Total: 34 companies.

Shikawa Prefecture

Komatsu Electric Power Co., Noto Branch
Noto Electric Power Co.
Anamizu Hydro-Electric Co.
Tomiki Electric Power Co.
Nakajima Electric Power Co.
Komatsu Electric Power Co.
Komatsu Electric Tsuhata Branch
Mukajima Electric Power Co.
Kanagawa Electric Power Co.
Taseiji-gawa Hydro-Electric Co.
Shirohachi Electric Power Co.
Hasaku Electric Power Co.
Dokyo-gawa Electric Power Co.
Wagura Electric Power Co.
Onsen Electric Tramway Co.
Matsukane Electric Tramway Co.
Kanazawa Electric Tramway Co.
Tsuruki-machi Electric Power Co.
Total: 18 companies.

Toyama Prefecture

Toyama Electric Power Co.
Komatsu Electric Power Co.
Komatsu Electric Power Co., Haku Branch
Oiwa Electric Power Co.
Takaoka Electric Light Co.
Hyomi Electric Power Co.
Demachi Electric Light Co.
Kakiha Electric Power Co.
Chuitsu Electric Power Co.
Chuitsu Electric Industry Co.
Toyama Electric Tramway Co.
Initsugawa Electric Power Co.
Besso-gawa Hydro-Electric Co.
Kamozumi-gawa Electric Co.
Nishigaki Electric Co.
Yamazaki Electric Co.
Yujin Electric Power Co.
Total: 17 companies.

Fukui Prefecture

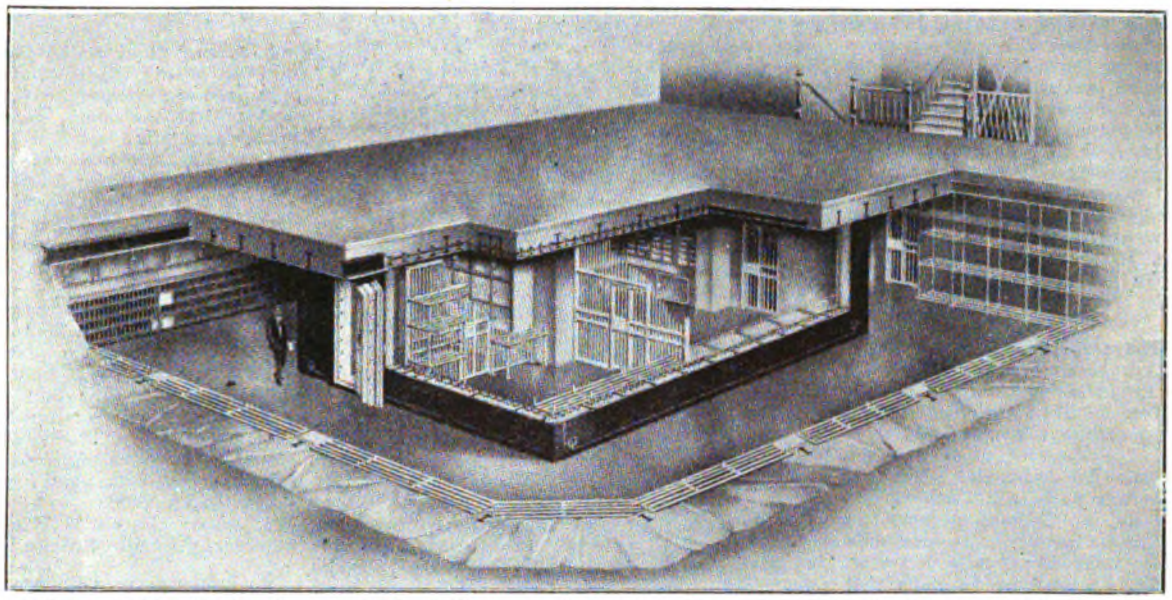
Wakasa Electric Power Co.
Mimigawa Hydro-Electric Co.
Suruga Electric Light Co.
Ichizen Electric Power Co.
Mikumi Electric Light Co.
Katsuyama Electric Power Co.
Taisho Electric Power Co.
Busho Electric Power Co.
Kyoto Electric Light Co.
Fukui Electric Power Co.
Nanetsu Electric Power Co.
Fukui Electric Power Co., Branch
Ano Hydro-Electric Co.
Hino-gawa Hydro-Electric Co.
Taseijigawa Hydro-Electric Co.
Total: 15 companies.

Miye Prefecture

Jusshu Electric Power Co.
Kitase Electric Power Co.
Tsu Electric Light Co.
Mano-gawa Hydro-Electric Co.
Iwakura Hydro-Electric Co.

THE CHATWOOD SAFE CO., LTD.

BANKERS' ENGINEERS, BOLTON, ENGLAND



A Strong-hold with Burglar-proof Island Treasury, designed and constructed by the Chatwood Safe Co., Ltd.

Sole Agent for China:

MAITLAND & COMPANY, LIMITED

33-4 SZECHUEN ROAD, SHANGHAI

Stocks of Safes and Strong Room Doors Carried

Tasei Hydro-Electric Co.
Matsuzaka Hydro-Electric Co.
Ise Electric Tramway Co.
Hamajima Electric Power Co.
Kitamura Electric Power Co.
Osagi Electric Power Co.
Orashi Hydro-Electric Co.
Shimmiya Hydro-Electric Co.
Kuki Electric Light Co.
Kitanachigawa Hydro-Electric Co.
Taikoku Steamship Company.
Nachi Hydro-Electric Company.
Namikiri Electric Power Co.
Total: 18 companies.
Grand Total: 149 companies.

Electric Power, Penang.—The municipal commissioners of Georgetown, Penang, on March 22, signed an agreement with the F.M.S. government for supply of electric power for the Penang Hill Railway.

COMMERCIAL FINANCE

Development Loans, Japan.—The Industrial Bank of Japan reports that new loans to the extent of Y.51,425,000 will be placed on the market by the following companies:—Kyushu Electric Tramways, Y.5,000,000; Chosen Electric Industrial Company, Y.3,000,000; Morinaga Cake Mfg. Co., Y.3,000,000; Japan-British Industrial Co., Y.5,000,000; Sala Phosphate, Y.7,000,000; Hokkaido Coal and S. S. Co., Y.10,000,000 in two instalments; Dai Nippon Artificial Manure, Y.5,000,000; Shirokiya Department Store, Y.3,000,000; Tosho Commercial Co., Y.1,500,000.

Straits Settlements Loan.—The local office of the Hongkong & Shanghai Banking Corporation has received telegram from its Singapore branch, which states: Straits Settlements loan, year 1921, Straits $20 millions, will be issued on May 2, 1921, interest at 7 per cent. per annum payable half yearly, tax free other than death duties, issue price 100 per cent., repayable at par on May 1, 1926.

New Bank.—The opening of the Shanghai and Haimen Industrial Bank at No. 468 Tientsin Road took place recently.

COMMERCIAL

Chinese Dispensary, Shanghai.—A new pharmaceutical enterprise, capitalized at $100,000, to prepare drugs from native medicinal herbs, is being organized by local merchants at Shanghai.

Fujiye Shoten.—Organized for the sale of tools, stone lumber and building materials. Office: 463 Higashi Hirai-cho, Fukagawa-ku, Tokyo. Manager: K. Banto.

Nishimura Shoten.—Organized with a capital of Yen 300,000, quarter paid up, to engage in general trading business with China. Office: 19 Nichome, Nakanoshima, Kitaoku, Osaka. Managing Director: K. Kishimoto.

GOVERNMENT FINANCE

New French Bank, Peking.—A group of French capitalists, co-operation with the Tobacco and Wine Administration are promoting a Sino-French Industrial Bank, registration of which has already been granted. The capital, fixed at $10,000,000, is to be subscribed by Chinese and French in equal shares. The head office of the bank, which will be located on legation street, Peking, will be formally opened to business shortly, while preparations are under way for the establishment of branch offices in treaty ports.

INDUSTRIES

Bamboo-paper Pulp Plant.—It is learned from Vice Consul Thorling that a big bamboo-paper pulp plant is to be opened in the Pegu district, Burma, by F. W. Heilger & Co., who are the managing agents for the Titaghur Paper Mills Company (Ltd.), a well as for several coal companies and jute mills in India. This concern has recently opened an office in Rangoon.

Hunan Cotton Mill.—The first Hunan cotton mill is reported as being very prosperous. During the year ex-Tuchun Chin-yao attempted to sell it to the Mitsui Company. A Chinese company has taken over the plant on a sixteen-year lease from the provincial authorities. The mill has 40,000 spindles and at daily capacity of 150 bales. Its valuation is placed at $1,000,000 and its net profit annual at $2,000,000.

Paper Mill, Hangchow.—A paper mill has been established in Hangchow by Messrs. Van Tse Min, Chien Yin, Tang, Hsu Jin Chow, Hsu Nien Kien, with a capital of $1,000,000.

Cement Works at Lungwha.—Chang Chien and Chu Pao-san are the promoters of a large cement plant to be established within a short time at Lungwha, near Shanghai. The capitalization of the project has been set at $1,000,000. As soon as sufficient subscriptions have been made to the stock, machinery will be ordered from Europe and America.

Tannery, Kirin.—A Chinese company, with a capitalization of $5,000,000, has been organized to operate a tannery in Kirin to be located near the Chen Yuan River. Construction work has begun. A Russian leather expert has been engaged to supervise the work.

Foochow Industries.—A machine works is being organized in Foochow for the manufacturing of all kinds of machinery and for repair work by Admiral Sah. A capitalization of $150,000 is the goal of the company, $50,000 having been subscribed. Modern machinery will be installed as soon as sufficient funds have been obtained. A button factory turning out bronze buttons is being operated successfully in Foochow and now has a daily output of 500 gross. The Foochow match factory is also progressing well. Fukien province has an industrial company under organization with

a capitalization of $1,000,000, one-fourth of which will be subscribed before operations begin. The first ventures will be the establishment of a brewery and a tannery.

German Wine and Tobacco Machinery.—Due to conditions in Germany, many wine and tobacco plants are attempting to dispose of their machinery, says the *Shanghai Times*. Recent advances made upon the part of German merchants has resulted in the formation, according to the Chinese press, of a Sino-German company for the manufacturing of wine and tobacco products in China. The machinery, it is said, will be shipped to China and will form the German share of the capital.

Egg Factory, Hankow.—A well-known Chinese merchant of Hankow has established an egg products factory with 150 workers employed. A cold storage plant is being built in connection with the plant.

Cement Plant Extension, Siam.—The Siam Cement Co., Ltd. has under consideration a scheme to double its output. It ended the year with a record net profit of Tcs. 633,014.22, carried forward Tcs. 167,851.89 and distributed Tcs. 407,493.04.

Wusieh's Industries.—The industrial plants of Wusieh, include 8 cotton mills, silk filatures, 16; flour mills, 6; oil mills, 8; weaving plants, 15; hosiery plants, 8; soap factories, 2; umbrella factories, 1; rice hulling mills, 15; spindle factories, 1; magnesium works, 1; total of 78 mills and 23,000 male and female workers.

New Macaroni Plant.—The Hing Wah Paste Company plans to construct a five story plant at Siao Sa Doo Road Shanghai, to supplement plant on Soochow Road and the one in Hongkong. The capitalization of the company has been increased to $1,000,000 and modern macaroni machinery ordered from the United States.

New Flour Mill, Kwachow.—A new flour mill named The Tsen Fen Mill is shortly to be established in Kwachow on the eastern side of Yangchow. Its capital is $600,000.

Siam's Machinery Imports.—With the exception of a few small rice mills made by local European and Chinese firms, there appears to be no machinery manufactured in Siam. The volume of such imports from abroad has hitherto been comparatively small. Considerable quantities of modern mining machinery has, however, been in use in Siamese Malaya, notably tin dredges, many of which have been supplied by well-known American firms. These firms have also furnished similar machinery for excavating canals for Siam's extensive irrigation scheme which is now under construction.

In view of the latter scheme, which is expected to bring extensive, more or less dry, areas under cultivation, and part of which may be completed during 1921, it is expected that a fairly large number of tractors and other agricultural machinery will be needed very soon. In fact, experimental work has already been successfully done in the use of several well-known tractors. Demonstration by capable engineers is essential in the beginning, and there are now in Siam two experienced American engineers who may possibly undertake the work.

Of marine motors, the small American outboard type has become very popular, and owing to the fact that some 400,000 small boats are registered as in use in Bangkok alone, there is likely to be a continued demand for these.

Owing to the partial failure of Siam's rice crop for the 1918-19 season, there has been but little activity in the imports of rice-milling machinery during the last two years, but prior to the war Germany did an extensive and sole business in this class of machinery. However, the prospects for a fair rice crop for the current 1920-21 season are good, and therefore a normal demand for rice-milling machinery seems again possible.

The demand for textile machinery has hitherto been insignificant. Cotton goods or other textile fabrics and yarns are not manufactured in Siam, but some weaving is done on native and Chinese looms.

Cotton Mill, Mukden.—The machinery for the Mukden cotton mill will be delivered some time in August. A report is circulated that as the short-staple cotton produced in Manchuria can not well be used in the manufacture of good grade cotton cloth, the purchase of American cotton is now under consideration.

Municipal Brickyard, Wellington, N.Z.—The city council of Wellington, New Zealand, has under consideration the erection of a municipal plant for the manufacture of bricks for the use of the city, since there is a large demand for bricks for its public-improvement work. Bricks at present are selling as high as £5 ($24.33) per thousand bricks and have recently sold as high as £5 10s. ($26.76) per thousand. It is thought that the erection of an up-to-date brickmaking plant might be found of great value, not only to the city but to the public in general.

Cotton Mills, Woosung.—Two new cotton factories, the Ta Chung Hua and the Hung Feng, are expected to be ready for operation in April, at Woosung-near Shanghai.

New Brick Factory, Federated Malay states.—A company has recently been incorporated for the purpose of pressing bricks composed of sand and lime, and has purchased an area of 34 acres at Serdang, Federated Malay States, where the factory and plant will be erected. In addition the company has acquired a lease for 21 years to use sand from 181 acres adjoining the purchased area. Bores have been put down over the areas where the sand is to be obtained and the results show that a practically unlimited supply of first-class sand is available. It is stated that the superiority of sand-lime bricks as compared with clay bricks has been amply proved in Europe during the past 17 years. Their manufacture has increased from a few millions a year to over 2,000,000,000. The percentage of lime used in making the bricks varies from 5 to 10 per cent. of the total material required.

Techow Arsenal Extension.—Plans have been completed for the extension of the arsenal at Techow where a plot of 50 *mow* has been secured for the construction of a large furnace.

Cigarette Factory, Wuhu.—A tobacco company is soon to be established at Kin Ma Gate, in Wuhu, with a capital of $1,000,000. The northern part of Anhwei will supply the tobacco for the use of this company.

Canton Co-operative Mill Project.—The recent strike of workers employed in the five large native cloth mills in Honam has resulted in a project to start the cloth mill on a co-operative basis. The workers have promised to subscribe whatever capital they have to the new enterprise.

China Cotton Statistics.—At the request of the International Federation of Master Cotton Spinners' and Manufacturers' Associations, Manchester, the Chinese Cotton Millowners' Association has drawn up a table of statistics showing the number of spindles in China, the amount of cotton consumed during a half year and the raw material in stock. In compiling these figures the association has had the co-operation of the Cotton Millowners' Association of China. The table is as follows:

(1) Number of cotton spinning spindles (exclusive of waste and doubling spindles):

(*a*) Total number of active and idle spindles	1,422,832
(*b*) Number of active mule spindles	nil.
(*c*) Number of active ring spindles	1,391,304
(*d*) Number of spindles in course of erection and expected to be working this year	115,000

(2) Quantity of cotton used for the half year ending January 31, 1921:

	bales of 500-lb.
(*a*) Chinese cotton	342,577
(*b*) American cotton	8,318
(*c*) East Indian cotton ...	51,311
(*d*) Egyptian cotton	nil.
(*e*) Sundries	nil.
(*f*) Total	409,206

(3) Cotton mill stocks on February 1, 1921:

	bales of 500-lb.
(*a*) Chinese cotton	164,274
(*b*) American cotton	4,619
(*c*) East Indian cotton ...	13,985
(*d*) Egyptian cotton	78
(*e*) Sundries	nil.
(*f*) Total	162,945

Kiukiang Flour Mill.—During the last winter a number of the wealthier merchants of Kiukiang organized a company for the operation of a large flour mill at that port, says the *Shanghai Times*. Sufficient capital has been obtained to make the project possible and several hundred *mows* of land along the water front have been purchased. The work of building will be begun within a short time. Kiukiang is lacking in industries of a manufacturing nature, a match factory employing 300 girls being the sole activity at present.

Whitin Machine Works.—The Whitin Machine Works, of Whitinsville, Mass., builders of cotton mill machinery, are making plans to open shortly an office of their own in Shanghai with a technical staff, under the direction of Mr. F. R. Pratt, a member of the American Society of Mechancial Engineers. It is the intention of the Whitin Machine Works, furthermore, to keep an adequate supply of repairs on hand for the accommodation of the mills. The office is to be conducted independent of Messrs. Gaston, Williams & Wigmore, who, however, will still continue to act as sales agents.

Factories at Wuhu.—Wuhu is becoming an industrial centre and now has a number of factories in successful operation. A match factory, capitalized at $140,000, is doing a prosperous business. A flour mill, the only one in Anwhei province, has been established for twenty years. Its capitalization was recently increased from $20,000 to $500,000. The production is now 720 sacks daily. A cotton mill was established in 1919 by Chow Tse-chi, a former minister of finance, with a capitalization of $1,000,000. Dividends declared by the company in 1920 amounted to 20 per cent. There are also two glass chimney plants in the city.

Can Factory, Shanghai.—A company to operate a plant for the making of cans and other tinware in Shanghai has been organized by C. C. Nieh. During the next month the building, located in the western district of the city, will be finished and the machinery, which has been ordered in the United States, is expected within a short time.

Workshop at Sungkiang, Kiangsu.—An official workshop has been established at Sungkiang for the instruction of the young workers of the city in various trades. The shop now makes enamel wares, basins and bath tubs. This year a large machine and an oven will be added to the equipment. More than sixty graduates and nineteen apprentices are now in the school.

Korean Industrial Plants.—An official industrial report from Chosen states that the total number of factories there is 2,900, the investment in them being Y.129,370,000. Their annual production is estimated at Y.225,400,000. Compared with 1917 these figures are an increase of between 50 and 60 per cent. The principal industries in Chosen are cereal cleaning, tobacco manufacturing, metal refining, cotton ginning, brewing, metal working and timber yards.

Kiangnan Arsenal.—The Kiangnan Arsenal has been instructed by the ministry of war to increase its output and enlarge its facilities in order to supply the central government with arms to carry out the Mongolian expedition.

Pootung Cotton Mill.—An addition to the long list of cotton mills now in existence is a new plant that is soon to be installed at Pootung, the building occupying 40 *mow* of land. The mill is to be equipped with 100,000 spindles of Chinese manufacture and the engine and motors have been ordered from a German firm. The mill also plans to install 800 hand cotton gins and twenty to be operated by oxen. Operations are expected to begin during August.

Tannery and Distillery, Foochow.—The Fukien Industrial Developing Company, Ltd., is being

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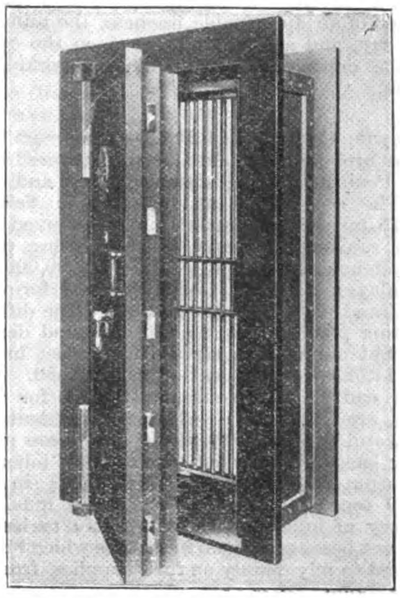

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Agents for China and Hongkong:

Messrs. ARNHOLD BROTHERS & CO., LTD.

organized with a capital of $1,000,000, to erect a factory in Foochow to tan hides and distill spirits.

New Cotton Mill, Hunan.—The Hua Shih Spinning & Weaving Co., in Hunan, is raising $500,000 for the establishment of a cotton yarn concern.

Industrial School, Chinkiang.—Mr. Z. C. Hsu, manager of the Pu Yih Cotton Mill, Shanghai, will found an industrial school at Chinkiang, Kiangsu. Mr. Hsu has donated a sum of $50,000, and has put the organization under the management of Mr. Y. P. Wang, of Shanghai. A lot of land with an area of 27 *mow* has been purchased and 100 *mow* of farm fields obtained for practical farm work.

Industries, Siberia.—The council of peoples economy is now engaged in working out plans for the leasing of concessions to foreigners. It has already been determined that these concessions should be part of the big plan of reconstruction of the Far Eastern republic and to this end the foreigners who will be most favored as far as the leasing of the concessions is concerned will be those who are to employ the most modern implements and methods. These concessions comprise the construction of rail and water routes, the building of ports and harbors and so on.—*Dalta News Agency.*

A Chinese Cement Plant, Shanghai.—A cement plant capitalized at $1,000,000 and equipped with the latest machinery is being established by Mr. P. S. Chu and Mr. Chang Chien, industrial magnates of Shanghai and Nantungchow, at Lunghwa, near Shanghai.

To Collect Native Products.—The ministry of communications has dispatched circulars to all the railway boards instructing them to make an extensive collection of different sorts of mineral, agricultural and manufactured products of various places along the trunk lines in order to facilitate studying the great variety of native produce and improving their producing efficiency. The railway administrations are also ordered to exhibit varieties of Chinese produce at the different stations.

Taiyo Shokai & Co.—Organized to manufacture electrical insulators. *Office:* 289 Kita Nagatsuka, Toyosaki, Nishinari-gun, Osaka. *Manager:* K. Miyaagi.

Saito Paper Mfg. Co., Ltd.—Organized with a capital of Y.350,000, all paid up. *Office:* 7 Sanchome, Yedo-bori, Nishi-ku, Osaka. *Manager:* K. Motohashi.

Whangpoo Conservancy Board

Notification No. 106

Tenders are hereby invited for the supply of **one Stationary Floating Pumping Plant (for pumping** ashore dredged material contained in barges) capable of an actual working output of 300 (and alternatively 600) cubic yards of mud per hour.

Printed specifications and form of tender may be obtained on application to the Board's Office, Dredging Department, 6 Kiukiang Road.

Sealed tenders accompanied by specified plans addressed to the **"Whangpoo Conservancy Board, Shanghai"** and marked **"Tender for Pumping Plant,"** must be sent in so as to be in the Board's hands on or before noon on the 30th October, 1921.

The Board does not bind itself to accept the lowest or any tender.

(Signed) H. VON HEIDENSTAM,
Engineer-in-Chief.

SHANGHAI, May 27th, 1921.

Nito Forestry Company, Ltd.—Organized with capital of Y.200,000, half paid up, for exploiting forests, lumbering, etc. Office, 7 Gochome, Nishi-dotori-bori, Nishi-ku, Osaka. Manager: T. Nagakubo.

Ito Iron Works.—Organized with capital of Y. 250,000, all paid up, to operate general and iron works, foundry and manufacture of machines and tools. Office: Dainin, Nishimari-gun, Osaka. Manager: T. Okaniwa.

Nippon Pigment Industry Co., Ltd.—Organized with capital of Y.100,000, quarter paid up, to manufacture coal, tar, dyes and other coloring matters. Office: 492 Nippori, Tokyo. Manager: S. Minowa.

Hakusan Productive Industry Co., Ltd.—Organized with a capital of Y.10,000,000, quarter paid up, to engage in reclamation, colonization and forestry enterprises. Office: 142 Tsumori, Nishinari-gun, Osaka. Managing Director: Shigejito Hakusan.

Imabayashi Oil Mfg. Co.—Organized for the manufacture of vegetable oils, etc. Office: Kudara-mura, Tosei-gun, Osaka. Manager: Y. Kobashi.

Sankyo & Company.—Organized to manufacture rubber shoes and general rubber works. Office: 1126 Kanasugi, Nippori, Tokyo. Manager: Y. Osuga.

Tokyo Casting Mfg. Co.—Organized to manufacture machines for foundry use. Office: Nippori, Kanosugi, Tokyo. Manager: T. Yuedo.

Tokyo Sakai Co.—Organized to manufacture brewing apparatus. Office: 15 Kawase-cho, Nihonbashi-ku, Tokyo. Manager: Y. Kudo.

Kikuya Furniture Mfg. Co.—Organized with a capital of Y.50,000, quarter paid up, to manufacture furniture, etc. Office: 104 Toyonaka-mura, Hono-gun, Osaka. Manager: C. Konishi.

Machine Shop, Foochow.—The Ming-Lih Metal factory, situated in Makiang, Fukien, established by Mr. Sha Tseng-bing in 1919, with a capital of $150,000, to manufacture engines, has been absorbed by the government officials of Foochow.

ENGINEERING

Hastings Engineering Works.—Registered as a private company. Offices: 102 Clive St., Calcutta. Objects: Mechanical, electrical and motor engineers, exporters, importers and repairers of automobiles, motor cars, etc. Authorized Capital: Rs. 2,00,000.

MINING

Hupeh Mine Contract.—A mining contract authorizing the Japanese capitalists in Hankow to open up the mines of Feng Huang Chan in the Tayeh mining district, Hupeh, has been countersigned in Hankow between certain Chinese officials with the backing of the Tuchun and the Japanese, says the *China Press*.

The contract provides that the mining company shall be a sino-Japanese enterprise. The Japanese will advance $2,000,000 to develop the mines, and the Chinese shall have no right to repudiate the agreement by refunding the Japanese capital. It is also stipulated that the Japanese shall supervise the running of the mines, the spending of money and the selling of ores. Again in case more capital is needed, the Japanese shareholders shall have the right of priority in making further loans.

Diamondiferous Lands, B.N.B.—Interest in the alleged diamondiferous land in the Labuk district, of British N. Borneo, which created quite a stir 15 or 16 years ago, has revived. Acting on behalf of a leading London financier, Mr. Elphinstone has visited the locality, and is bringing home samples for examination. If the outcome of the tests is satisfactory, a prospecting syndicate will be formed, with a view to sending out a properly equipped prospecting party, but it will be wise not to be too optimistic, in view of the negative results obtained on the last occasion.

Kirin Diamond Mine.—The gold mining bureau at Kwangyinshan, Kirin, has discovered deposits of diamonds in a gold mine now being worked, according to the Chinese press. The stones are large and of an appreciable fineness, the announcements say, and specialists have given the opinion that the deposit is worth while as a working proposition.

Malayan Collieries, F.M.S.—Some years before the war broke out coal had been discovered in the Malay Peninsula, in the states of Perak and Selangor. The coal found at Rawang, in Selangor, some 25 miles from Kuala Lumpur, proved to be of first-rate quality, and as prospecting proved the existence of a supply of over 10,000,000 tons, the Malayan Collieries Co. (Ltd.) was formed to work it and place it on the market. The difficulty of getting plant during the war hindered development, but mining was started in earnest in 1915, when 11,523 tons of coal were obtained. Down to the end of 1918—the latest year for which figures are obtainable—437,388 tons had been mined, and the quantity would have been greater but for lack of equipment, shortness of labor, etc. The output in 1916 was 101,846 tons; in 1917, 155,279 tons; and in 1918, 168,740 tons. The discovery of indigenous coal is likely to have an important bearing on local industries which hitherto have had to rely mainly on fuel supplies from the natives forets.

Mining Concessions, Kwangtung.—The Chinese government has informed the British legation that it refuses to recognize the mining agreement signed between the former Kwangsi government in Canton and the Anglo-Chinese proprietory syndicate of Hongkong because it was done without the sanction of Peking.

American Dredge Project, F.E.R.—A Harbin report says that the Amur Mining Board has received a tender from a big American concern to put up twenty-five dredges on condition that the board will pay to the concern from 5 per cent. to 15 per cent. of its profit. After a specified time the dredges will become the property of the board.

Hainan Development.—A body of returned capitalists from the Straits Settlements have organized for the purpose of developing the resources of Hainan, says the *Canton Times*. They will confine their attention to opening up mines, reclamation and the fishing industry.

Coal Deposits, Magdagashi, S.I.B.—Blagoveschensk railway workers have discovered coal deposits near station Magdagashi. The average thickness of the layer is about 6 feet.—*Dalta Agency*.

Coal Mining in Shantung.—A new mine is being projected by a Japanese engineer at Szechuan, in the centre of the coal field of Shantung province, says the *Shanghai Times*. The deposit has been tested at Nantingchen and the property staked that occupies 400 *li*, has twenty-one veins, may be worked without difficulty, and is said to have a visible supply for forty years workings Japanese capitalists including the Okura Company, wish to organize a company for the exploitation of the property, subscribing one-half of the stock and allotting the remaining 50 per cent. to the government of Shantung.

Peipieu Coal Mines.—Coal in Chiyangchow, Peipieu, is of such quality, that the Peking-Mukden Railway Administration has decided to operate mines there with a capital of $5,000,000.

Mineral Investigation of Anhuei.—Mr. Li Hsien has been dispatched by the ministry of agriculture and commerce to investigate the mineral resources of Anhuei.

Mining in the Zabaikal and Amur Regions.—The supreme economic council at Chita have decided to stimulate the gold mining industry during the coming season, in Zabaikal, Amur, and the maritime regions, this industry will be given a new impetus by the introduction of modern improved methods of mining, modern machinery, etc. It is expected to take out of the mines during the course of the coming year, in the Zabaikal province about 290 poods (11,200 pounds) in the Amur region, including its three divisions of Amur Zeya and Booriansky, 250 poods (9,000 pounds), from the maritime provinces. The report of the expected output has not been received.

Large capital will be required for the financing of this project, and it has been decided to begin negotiations at once with the capitalits of Great Britain and the United States of America with that end in view.

New Mine, Huchow.—A mine has been discovered in Pa-lung-tung, near Huchow, in Chekiang. A local merchant, Mr. Chow Chin-yue, has obtained the sanction of the ministry of agriculture and commerce to exploit the mine with a joint stock company. A preliminary fund of $200,000 has been raised by the promoters and a stock company with a larger capital will be organized if the investigations prove successful.

Anthracite Coal Mine, Hupeh.—An anthracite coal mine of excellent quality has been discovered in Chang-cha-tung at Ying-chen-hsien, Hupeh. The provincial authorities have undertaken to open the mine and $50,000 have been appropriated by the Bank of China of Hupeh for the preliminary work. A company will be established later.

Tameka Coalmining Co., Ltd.—Organized with a capital of Y.5,000,000, quarter paid up, to operate coal mines in the Tameka coal field. Office: 7 Nichome, Ginza, Kyobashi-ku, Tokyo. Managing Director: Baron Kilhachiro Okura.

Tsuru Stone Mining Co.—Organized to quarry stone at Tsuru, Yamanashi prefecture. Office: 25 Sanchome, Nishikicho, Kanda-ku, Tokyo. Manager: M. Nara.

OIL

Central Asian Oil Fields.—In 1914 there was produced in the Ferghana region, of Turkestan, 1,800,000 poods (216,000 barrels) of petroleum and four fields were exploited—Shart-Su, Maili-Su, Tchimion, and Sel-Rokho. According to the Russian geological survey, it is considered that there are prospects for developing the oil industry of Ferghana. The needs of the cotton industry and the railroads demand large quantities of petroleum. The largest company is Tchimion (Ltd.), which has a refinery for kerosene and gasoline Tchimion oil wells are in Skobelev county, 17 miles southeast of the station Vannovskaya on the Central Asiatic Railroad. A pipe line connects the wells with the station.

In connection with the exhaustion of deep levels and high prices for oil there was from 1910 to 1914 a revival of production from hand-dug wells, the depth of which sometimes reached 350 feet. The total amount of such oil in 1913 was 19,000,000 poods (2,280,000 barrels); it was pumped to the principal oil fields or sold on the spot.

Chinese-English Petroleum Company.—Cable advices from Peking state that the Japanese activities in Shensi have not resulted in securing oil concessions, but that a Peking syndicate has formed a Chinese-English petroleum company, for which the preliminary agreement has been filed with the ministry of Agriculture.

Japan's Petroleum Production.—A report from Tokyo states that the production of petroleum in Japan during 1919 amounted to 76,714,000 gallons. The quantity, in gallons, produced by each field was: Ishikari, 201,000; Akita, 31,761,000; Niigata, 44,434,000; and Taiwan, 318,000.

Spirit & Co.—Organized for the manufacture and sale of lubricating oils. Office: 14 Kitadori, Yedobori, Nishi-ku, Osaka. Manager: K. Otsuka

Japanese in Mexico.—The Nippon Petroleum and Hoden Oil Companies are negotiating for the purchase of certain oil fields in Mexico and have already paid over the price for the prospecting rights. Engineers and drilling are expected to be sent ot Mexico in the near future.

PUBLIC WORKS

Municipal Expansion Plans, Japan.—The home department has approved the general plans for the extension of the municipal limits of the six capital cities. The area of Tokyo will be 190 square miles or six times greater than the present city. Osaka will be extended to 110 square miles, taking in 70 small villages including Sakai City, or about six times the present size. Kyoto's total area will be 150 square miles taking in 57 villages, or thirteen times the present size. The total area of Kobe will be 43 square miles including 8 outlying districts or three times its present area. Yokohama will be 60 square miles taking in 13 outlying districts, or five times its present size. Nagoya will have a total area of 70 square miles taking in 20 outlying districts, or four and a half times its present area.

Development Plans, Mergui.—The government has sanctioned the following schemes for the development of Mergui, Lower Burma. The reclamation of the foreshore for a distance of 1 mile; the estimated cost being 24 lacs of rupees. The water supply for the town, which is now dependent on wells which dry up about April. The question of hydro-electric power scheme for lighting the town is being discussed. A railway between Mergui and Siam, to join up with the Siamese Railways to Bangkok; this line will open up a large tract of country at present without roads, and will certainly enhance the value of the Thabawleik mines, the proposed alignment running through their area.

Philippine Public Utilities.—New public utilities owned and run by government agencies are registered in the public utility commission. At the close of 1919 the number of government agencies operating as public utilities was as follows:

Steamers.—Department of Mindanao and Sulu—the provincial boards of Leyte, Mindoro, Cotabato, Bohol, Cebu, Agusan, Lanao, Palawan, Cagayan, Davao, Romblon and Zamboanga; bureau of commerce and industry.

Automobiles.—The Benguet Auto Line, bureau of public works.

Wharves and Docks.—The municipal councils of Romblon, New Washington, Capiz. and Butuan, Agusan; the department of Mindanao and Sulu; the provincial governments of Surigao, Bohol, Misamis, Mindoro and Davao.

Ice.—The insular ice plant and cold storage.

Irrigation.—The municipal governments of Rosales, Pangasinan; San Fabian, Pangasinan; Abulog, Cagayan.

Electric Light.—The city of Baguio; the provincial government of Pangasinan; and the municipal government of Taal, Batangas.

Water.—The metropolitan water district, Manila; the city of Cebu; and the city of Iloilo (projected).

Sewer.—The metropolitan water district, Manilar.

Telephones and Telegraph.—The bureau of public works (Benguet); the provincial governments of Nueva Ecija, Pampanga, Oriental Negros, Zambales, Bohol, Iloilo, Laguna, Misamis, Occidental Negros, Rizal, Tarlac, Tavabas, Abra, Lanao, Cotabato, Bulacan, Mountain Province, La Union, Bataan, Albay, Davao, Palawan, Batangas, and Ilocos Sur; Bukidnon government telephone system; Ilocos Norte telephone system; provincial telephone line, Pangasinan; Zamboanga telephone system; the municipal governments of Hilongos, Leyte; Tuburan, Cebu; Gonzaga, Cagayan; Aparri, Cagayan; Sogod, Leyte; Villaba, Leyte; Kawayan, Leyte; and Libagon, Leyte.

Public Works, Korea.—For the purpose of building an embankment on the Han River at Yongsan Y.129,600 will be allotted in two consecutive years beginning next fiscal year, the instalment for 1921 being estimated at Y.64,800. A total sum of Y.555,158 was at the same time set apart in the budget estimates, with a view to granting aid to the waterworks at Chongju, Kongju and Chinnampo, and the street-improvement works at Fusan and Keumipo, as well as to the irrigation works at Yongsan.

Public Works, Ceylon.—The Ceylon government has published the first draft of a proposed ordinance to make provision for a loan of £6,000,000 to be applied to certain new public works and the extension of those already undertaken. The repayment to the general balance of the colony of sums advanced therefrom to the municipal council of Colombo for construction of the Colombo drainage works and the extension of the Colombo waterworks will absorb £1,420,000 of the loan. The remainder will be spent on railway and station extensions, oil, and lake development, and other works of development. The various public works of Ceylon are in charge of the director of public works. Railway extension, however, is under the direct control of the general manager of the Ceylon government railways. All supplies for either of these departments are purchased through the crown agent in London, although recommendations go forward from the local departments interested.

Indo-China Public Works.—The Saigon harbor improvements are to be extended to Cholon, a suburb of Saigon; and similar works are to be undertaken at Haiphong, Tourane and at Kwang-Chau-Wan. This last-named territory, covering some 400 sq. miles, was leased to France by China in 1898. It is also intended to carry out the continuation of the Saigon-Tourane railway line to Haiphong. In introducing the proposals to the

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authorities at Paris, M. Long, the governor general of Indo-China, expressed the belief that a loan covering a large part of the cost could be raised in Indo-China.

RIVERS AND HARBOR, IMPROVEMENTS, WHARVES, DOCKS

Grand Canal Dredging.—Merchants of Wusih and Kaingyin will dredge the section of the Grand Canal from the Great Lake to the Yangtze River, a distance of approximately 100 *li*. The canal is being silted up and it will be necessary to dredge it along its entire length and reconstruct the embankments. Two branch waterways and a dike are included in the project. The total cost of the work is estimated at $1,000,000 and an effort is being made to raise the amount by appropriations and subscriptions.

Chefoo Breakwater.—The breakwater for Chefoo Harbor, in accordance with plans to make this north China port thoroughly modern in every respect, has been completed.

The breakwater is approximately at its full height and protected by heavy rubble on the slopes for a length of about 3,200 feet. A total length of 17,000 feet of parapet wall has been built. Work on the mole involved the depositing of 194,000 cubic yards of sand, 167,000 square yards of brushwood zinkstucks and 64,500 tons of rubble in the foundations and lower part and nearly 173,000 tons of rubble in the upper part.

The reinforced concrete caisson for east end of the quay was sunk successfully and filled with concrete and the large masonry blocks in the quay wall and the wing walls have been put in place. About one-half of the masonry superstructure remains to be constructed.

Dutch Expert for China.—The Dutch minister to Peking has suggested to the Chinese authorities the employment of Dutch experts for the improvement of riparian work as a method of promoting foreign trade. He assures the Chinese that Dutch capitalists would be pleased to make any necessary advances to China for the purpose. Acting on this advice the Chinese government has decided to employ a Dutch expert.

Enoura, New Naval Port, Japan.—The construction of a naval port at Enoura, Shizumura, near Numazu at an estimated cost of Y.15,000, which has been under contemplation at the navy office is to be commenced shortly, says a Numazu dispatch to the *Kokumin*.

According to the proposed plan, a tunnel will be excavated through Washizusan, a hill surrounding the village of Enoura, and two wharves will be constructed at Okubo Cape and Sakazure.

New Dockyard, Penpu.—A dockyard will be built at Penpu, an important station on the Shanghai-Nanking Railway, situated on the southern bank of the Wei river, Anhuei, by the general chamber of commerce of Penpu and local Chinese municipal authorities. The work is expected to be completed in June of this year.

San Men Wan Reclamation.—The bureau organized for the preliminary reclamation work at San Men Wan, on the coast of Chekiang north of Wenchow, has been abolished, and placed under the provincial government of Chekiang. A plan to organize a reclamation board to carry out the work on the capital invested by overseas Chinese is under consideration.

River Improvement, Kanagawa, Japan.—The home department has assisted the Kanagawa authorities by the appropriation of Y.417,500 for the improvement of the Tama River during 1921.

Harbor Improvement, Japan.—The home department has set aside the sum of Y.1,310,000 for harbor works in 1921, distributed as follows: Yokkaichi Harbor, Miye Prefecture, Y.270,000; Funakawa Harbor, Akita Prefecture, Y.230,000; Shiogama Harbor, Miyagi Prefecture, Y.250,000; Aomori Harbor, Aomori Prefecture, Y.30,000; Niigata Harbor, Niigata Prefecture, Y.80,000; Nagasaki Harbor, Y.250,000; Nagoya Harbor, Aichi Prefecture, Y.200,000; Hana Harbor, Okinawa Prefecture, Y.150,000.

New Kure Dock.—The Japanese navy department has decided to construct a dock at Kure which will be large enough to accommodate a warship of the 40,000-ton class. It is expected that the construction work will take about three years, and when it is completed the 8 8 squadron will be perfectly equipped.

New Kiangnan Dock.—Plans have been drawn up for a new dry dock at the Kiangnan Dock and Engineering Works, Shanghai, says the Chinese Press. Work will commence shortly on the new dock which will measure 500-ft. long and 200-ft. deep.

Hongkong Reclamation.—Tenders are invited by the government for reclaiming approximately 90 acres of the Praya East foreshore with materials obtained by cutting down Morrison Hill; protecting the area so reclaimed by sea and quay walls: constructing sewers stormwater drains, reinforced concrete piers, refuse-boat pier, retaining walls and temporary and miscellaneous works.

RAILWAYS

Locomotives for F.M.S.—Consul H. J. Dickinson reports from Singapore, Straits Settlements, that orders have recently been placed in the United States for twenty American-made locomotives for use on the Federated Malay States railways, their use in the past having given every satisfaction. Ten of these locomotives will be delivered at Penang and ten at Singapore.

British Locos Arrive.—The s.s. *Pembrokeshire* brought 1,000 tons weight of locomotives, built

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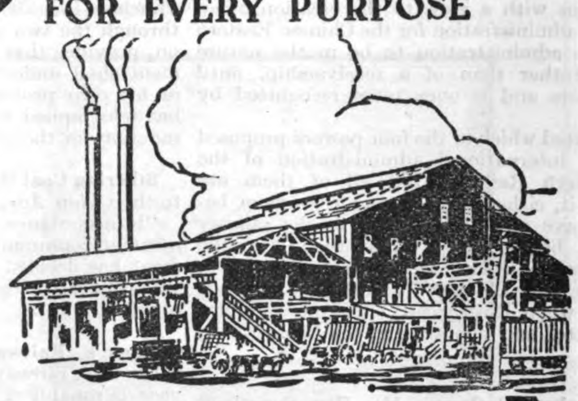

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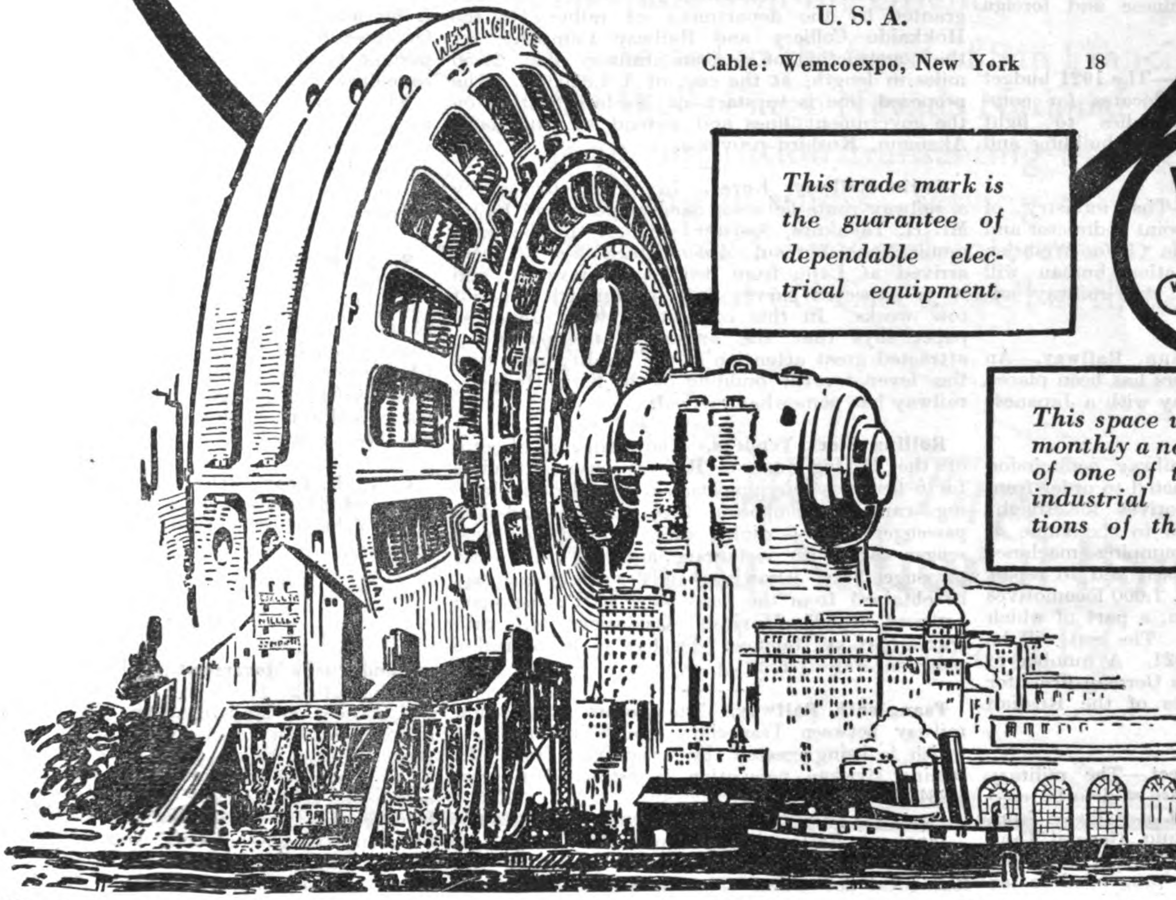

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in the United Kingdom for the Chinese government railways. These will be unloaded at Woosung and assembled at the S.-N.-R. shops. This is the third consignment of British-built locomotives which have already arrived, and others will follow.

C.E. Railway Board.—The British, French, Japanese and American governments have commenced discussions with a view to the creation of an international administration for the Chinese Eastern Railway, this administration to be in the nature of a trust, rather than of a receivership, until Russia recovers and is once more recognized by the powers.

It is not stated which of the four powers proposed the plan for international administration of the Chinese Eastern Railway, but all of them are interested in it, either on economic grounds or because they have advanced money to the railway and hold its bonds. It is understood that the internationalization plan would have the effect of neutralizing the Chinese Eastern Railway pending the time when Russia can once more undertake the control and operation of the line.—*China Press.*

Canton-Hankow Railway.—Mr. Hsu Sung-hao, managing director of the Canton section of the Canton-Hankow Railway proposes to complete the upper section to Ping Shek by floating a loan of $20,000,000, to be secured by the constructed section of the line, a distance of approximately 460 *li* or 139 miles.

Kiukiang-Nanchang Railway.—A recent decision has been made by the directors of the Kiukiang-Nanchang Railway, to turn the line over to the ministry of communications to become a part of the Chinese government railways. The action is a result of the possible foreclosure on the part of a Japanese syndicate which is said to have loaned more than $20,000,000 to the management. The ministry of communications has not as yet indicated its willingness to take over the line and assume the indebtedness. Protests are being made by the Japanese interested.

Suiyuan-Paotaochen Railway.—The Peking-Suiyuan Railway Administration has petitioned the ministry of communications to build a line from Suiyuan to Paotaochen, a distance of 300 miles, and to raise the needed capital of $5,000,000 by issuing bonds through Chinese and foreign banks.

Railway Construction, Korea.—The 1921 budget of the Chosen administration allocates for communications, Y. 1,466,920; subsidies to light railways, Y. 380,850; and railway building and improvement, Y. 6,500,000.

Chefoo-Weihsien Railway.—The ministry of communications will shortly appoint a director and form an administration for the Chefoo-Weihsien Railway. The present construction bureau will become a department under the railway administration.

Sleepers for Kirin-Changchun Railway.—An order for 150,000 railway sleepers has been placed by the Kirin-Changchun Railway with a Japanese firm (the Ta Po Shang Hui).

Locos for Russia.—The railway commission of Soviet Russia has been instructed to order from foreign countries 2,000 locomotives for freight trains and parts of locomotives to the value of 60,000,000 Swiss *kronen* and pumping machines to the value of 15,600,000 *kronen* and to repair 4,000 locomotives in local shops. 1,000 locomotives have been ordered from Sweden, a part of which will be ready by this summer. The rest will be delivered before the end of 1921. A number of contracts have been signed with German firms for the construction of locomotives of the Russian type.

Mengtze-Boyi Railway Project.—The military and civil governors of Yunnan are said to be contemplating the construction of a railway from Mengtze to Boyi. The ex-Tuchun, General Tang Chi-yao, proposed the construction of this line last November and the scheme progressed so far as the nomination of Mr. Lo Pei-chin, the ex-civil governor, as director. It is understood that the new civil and military governors will authorize Mr. Lo to continue with the project.—*Reuter.*

Chuchow-Pingkiang Railway.—General Chou Heng-ti, commander-in-chief, in Hunan, and General Chen Kuang-yuan, Tuchun of Kiangsi, have agreed to co-operate in the construction of the Chuchow-Pingkiang Railway. The railway passes through the two provinces and the scheme, agreed on, provides that each of the parties to the agreement shall undertake the construction of the line in his own province. General Chen Kuang-yuan has telegraphed to the government, asking for its sanction for the proposal.—*Reuter.*

Siberian Coal Mine Railway.—A Harbin despatch to the *China Advertiser* says:

"In accordance with the proposal of the department of communications, the Far Eastern government has decided to build a branch line to Khari-yalchinsk(?) at the estimated cost of 100,000 gold roubles."

Japan's Railway Program.—The amount earmarked for railway improvement during the current year is roughly Y.141,092,400, of which 65 million yen will be spent for construction, to be appropriated in the following order:—

To the Tokyo Railway Bureau...	Y.8,700,000
„ the Kobe Railway Bureau ...	„ 7,000,000
„ the Nagoya Railway Bureau	„ 5,500,000
„ the Moji Railway Bureau ...	„ 6,800,000
„ the Sendai Railway Bureau...	„ 6,800,000
„ the Sapporo Railway Bureau	„ 5,000,000
„ the Kobe Improvement Office	„ 6,200,000
„ the Tokyo Improvement Office	„ 11,000,000
„ the Atami Line	„ 8,000,000

Kung-Chang-Lin Railway.—The Peking Jih Pao is authority for the announcement that the Mitsubishi Company, is negotiating with the authorities of Mukden for permission to operate the Kungchang-lin iron mine and to build a railway from Mukden to Kung-chang-lin for the transportation of coal. Since the proposed railway passes through a mountainous section, involving great expense in its construction, it is proposed that it be built under Sino-Japanese joint control. The intention is to extend the line later to Liang-yang, where extensive iron mines abound.

New Railway, Hokkaido.—A charter has been granted by the department of railway to the Hokkaido Colliery and Railway Company for the construction of a steam railway line, 28.50 miles in length, at the cost of Y 1,830,000. The proposed line is to start at Kushiro Station on the government lines and extend to Shitakara, Akangun, Kushiro province.

Lajin Railway, Korea.—In order to survey a railway route between Sangsampong and Lajin, Mr. H. Takakura, Assistant engineer in the communications bureau, accompanied by 13 men, arrived at Lajin from Seoul a few days ago, and it is expected survey will be finished in about tow weeks. In this connection, local Japanese paper says that the arrival of the party has attracted great attention in the locality now that the fever for the building of the Kirin Hoilyong railway has somewhat revived.

Rolling Stock Tenders.—The managing director of the Peking-Hankow Railway invites tenders for 6 first-class sleeping cars, 6 second-class sleeping cars, 6 composite first and second-class passenger cars, 6 dining cars, 6 third-class passenger cars with restaurant and 10 third-class passenger cars. Drawings and specifications may be obtained from the head office at Peking upon payment of $25, Mexican. Quotations c.i.f. railway wharf at Hankow. Tenders to be opened 3 p.m. on July 1st.

Tsang-shih Railway.—The section of the new railway between Tsangchow and Shihchia-chuang which is being erected by workmen from the famine stricken population is estimated to cost $1,840,000.

Japanese Railway Extensions, 1921.—The lines projected by the department of railways for 1921 total 260 miles. The name of the line and approximate date of completion is here given: Kohama line, 12 miles, April; Matsuda line, 10 miles, June; Saijo line, 16 miles, June; Hidari-zawa, 8 miles, June; Hoshiba line, 9 miles, June; Nichibu Minami line, 14 miles, June; Joitsu Minami line, 13 miles, July; Ikiho line, 10 miles, July; Hamada line, 9 miles, August: Yamano line, 14 miles, Aug.: Nemuro line, 6 miles Sept.: Joitsu Kita line, Sept.: Somo line, 10 miles, Sept.: Minato line, 17 miles, Sept.: Hidari Sawa line, 2 miles, Sept.: Nayori line, 17 miles, Sept.: Hoki Kita line, 5 miles, Sept.: Netsu Naka line, 10 miles, Nov.: Takayama Line, 8 miles, Nov.: Masuda line, 5 miles, Nov.: Yokoguro East, 4 miles, Mar. 1922: Yokoguro west, 5 miles, March: Hidari Sawa line, 5 miles, March: Nichibu north, 6 miles, March: Nichibu south, 18 miles, March: Hosojiwa line, 2 miles, March: Sugiyasu line, 3 miles, March.

Peking-Suiyuan Extension.—To finance the construction of the extension from Suiyuan to Paotowchen, the Peking-Suiyuan Railway has decided to issue short-period domestic bonds to the amount of $5,000,000. The general conditions on which the bonds are issued are:—

1. Interest will be $7\frac{1}{2}$ per cent. annually.
2. Redemption begins with the second year at $1,250,000 for four successive years.
3. The entire revenue of the Peking-Suiyuan Railway will be the security.
4. The subscription will end on the 30th May.

Materials will be purchased in May and tenders for the construction are invited. The work, it is hoped, will be started before the end of the year.

The section from Pingtichien to Suiyuan, a distance of 300 *li*, has been finished in less than a year, despite adverse climatic conditions.

F. M. S. Railway Receipts, 1920.—The railway receipts last year from all sources amounted to $17,316,000, an increase of 15.8 per cent. over 1919. Expenditure amounted to $16,103,000 compared with $11,286,000 in 1919, an increase of 42.6 per cent. The nett earnings were $1,213,000 or less than 1 per cent. on the capital invested in the railway up to December, 1920, viz., $144,000,000.

Railway Conditions in Russia.—According to the Russian Soviet press there are now thirty-one railways in Russia that have suspended traffic altogether as a result of the fuel famine. Of these nineteen are classed as major or important trunk lines and the other twelve are of secondary importance.

The motive power of the railways is also said to be in bad shape, for at the beginning of this year about 58 per cent. of the ten thousand locomotives of Russia were out of commission, and at no time during the past year were 50 per cent. in commission.

S. N. R. Branch, Changchow.—As previously reported a short branch line will be built from Changchow, one of the important stations on the Shanghai-Nanking Railway, to Chi-tze-yen, a food producing centre in the neighborhood of Changchow, to facilitate the transportation of food stuffs. The survey of the line has been made, and construction, estimated to cost $1[illegible], has been started.

C. E. R. Loan.—The Chinese Eastern Railway borrowed $3,000,000 from domestic banks to pay off a debt of $2,000,000 and to defray other expenses.

ROADS

Good Roads Movement, China.—The first annual meeting of the Good Roads Movement of China will be held on May 5 at the Chinese Y. M. C. A. at 120 Szechuen Road at 5.15 p.m. The date and purpose of this meeting have been announced by Dr. C. T. Wang, who is the chairman of the executive committee and invitations have been sent to the leading men of Kiangsu and Chekiang provinces, including the governors and members of the provincial assemblies. The meeting proposes to launch a movement national in scope and which will claim the support of every person interested

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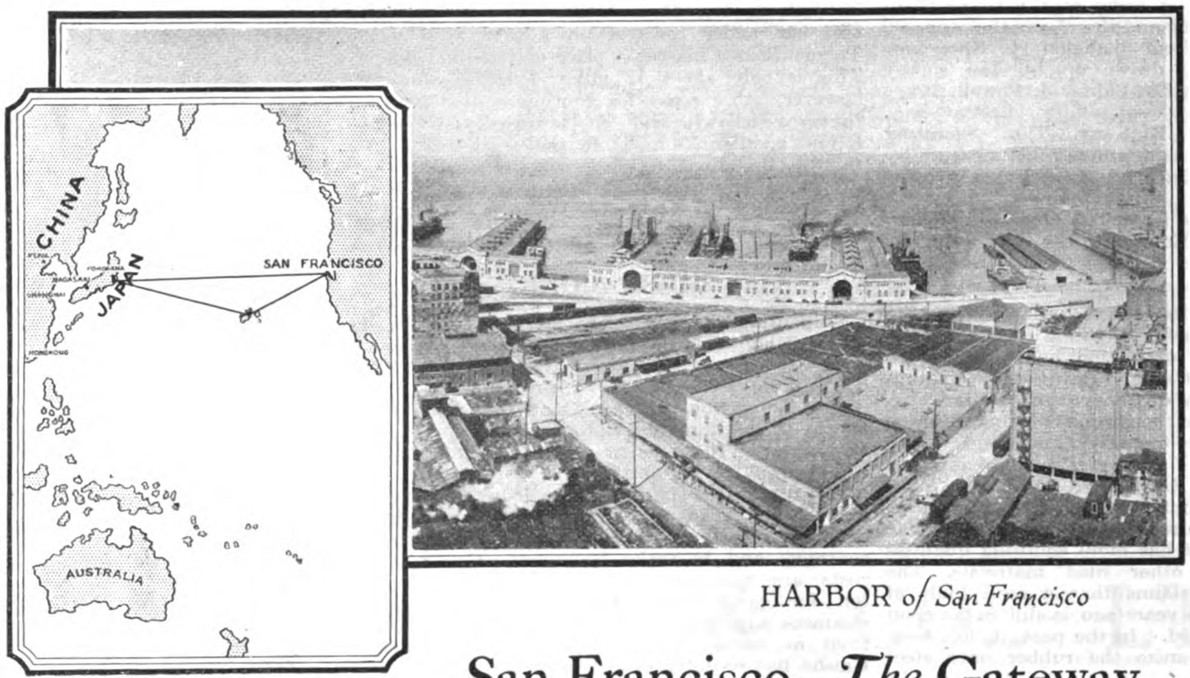

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in China. Already many letters have been received from all over the world asking for more news of the Good Roads Movement.

At the May meeting, a constitution will be presented for adoption, officers for the organization will be elected, and the purpose and plans of work will be outlined. Reports of various committees will be received, including that of the Exhibition Committee, headed by Mr. C. C. Nieh, which is planning for a big exhibit of road materials and machinery. A map is being sent with each invitation to the meeting and this shows the proposed route for the road from Shanghai *via* Hangchow to Nanking. It was drawn up by the survey committee headed by Mr. Sidney J. Powell.

Tehchow-Lintsing Highway.—The Shantung highway constructed as a famine relief measure by the American Red Cross is now practically complete.

This highway runs from Tehchow to Lintsing, with a branch from Enhsien to the railway line at Ping Yuan.

Chefoo-Weihsien Road Extension.—Since the completion of the Chefoo-Weihsien road, the merchants and officials of Chefoo have decided to extend the course of the highway to Weihaiwei and Haiyang by way of Chaoyunan and Laiyang. A $300,000 fund from the Chefoo Sea Dyke Bureau is to be used to finance the project.

Rubber Roads, Singapore.—Permission has been granted to the municipal engineer at Singapore to build one or more roads of rubber to determine whether this product has more enduring qualities than laterite and other road materials. The municipal engineer claims that a road built of rubber in England 45 years ago is still in as good condition as when laid. In the past it has been the custom to vulcanize the rubber onto steel plates measuring 9 by 3 inches but it is thought that to vulcanize the rubber onto concrete piles will prove as durable and be much less expensive.

Dairen-Port Arthur Road.—Surveys for a road to be built between Dairen and Port Arthur have been started. The road will be from 30 to 50 feet in width, approximately 21 miles long, will contain two tunnels, and cost more than Y.1,500,000 gold. It will be built along the seacoast, and is to be confined entirely to the use of motor cars or rubber-tyred carriages.

Chekiang-Anhwei Motor Highway.—The projected motor highway between Huchow, Chekiang province, and Kwangteh, Anhwei province, a length of 50 *li*, has become a possibility, $300,000 having been raised by the gentry of the districts for its construction. One hundred and fifty thousand dollars will be used for the construction of the road, $100,000 for the purchase of motor cars, and building three stations and $50,000 will be placed in a reserve fund.

Road Building, Mokanshan.—The Shanghai-Hangchow-Ningpo Railway board is building a modern road ascending from the foot of Mokanshan to its top. Although this road was built last year its width and gradient is not adapted to automobile traffic. A road will also be built between San-jao-pu and Yu-chun. Surveyors are being made.

Nantungchow City Road.—The construction of the three main roads, joining Haimen in the eastern and southern directions and Hsukao in the northwestern direction, and five branch roads, of a total length of 500 *li*, will be completed before May 22nd, 1921.

Road Building, Soochow.—A modern road, 20,000 feet long, is being built from Soochow to Hochou Hill, at an estimated cost of $12,000. The funds were raised by subscriptions from Shanghai merchants.

Chong-shih Road, Chihli.—It is reported that the preliminary costs of the Chonghsien-Shihchachong road, Chihli, is estimated to be $1,840,000. A sum of $200,000 was donated on April 27th, 1921 by the ministry of communications to the work department of the Chong-Shih road for purchasing land.

Chefoo-Weihsien Road.—The work of the building of the Chefoo-Weihsien road, Shantung, will be completed in May of this year.

Road Development by Red Cross.—The Red Cross road-making proceeds apace. There are two roads in process of completion, one from Yangchuan on the Chengtai Railway to Liaochow (a distance of over 80 miles) and the other from Pingyao to the Yellow River (a distance of over 100 miles.) The Shansi Famine Relief committees also has under construction a new road from Taiyuanfu to Chinssu, a place of historic interest. This is only about 12 miles long. There are, however, other plans for continuing this road as far as Fenchowfu and on towards the Yellow River, another 50 miles to the south-west. All this roadbuilding, coupled with the schemes of the Shansi government, is going to make Shansi much more accessible for travelers.

SHIPBUILDING

Shipbuilding, Japan.—There are now in Japan only 19 shipbuilding companies capable of constructing vessels of more than 1,000 tons gross, while there were over 70 during the war. The depression of the shipping trade is most acutely felt in the shipbuilding industry, and it is feared that some of the existing companies will have to close down or be absorbed by other concerns. The recent fall in prices of vessels has caused the cancellation of many contracts. It is considered advantageous to pay compensation for canceled contracts and to make new ones. Construction costs are now roughly estimated at Y. 100 per ton for cargo-boats. During December three steamers aggregating 10,650 tons were launched from as many shipyards. The Nippon Yusen Kaisha has recently placed an order for the construction of three 10,000-ton steamers.

At present there is no particular protection for the shipbuilding industry, although assistance of some sort is needed. The government in considering this phase seems to be inclined toward abolishing the import duty on steel, timber, machinery and other shipbuilding accessories that are difficult of production in Japan.

Launching at Saigon Dock.—On the 7th of April was launched the steamer *Albert Sarraut.* The dimensions are: Length, 90 metres; breadth, 12 metres; diplacement, 3,100 tons; tonnage, 5,000.

The launching operation was effected most successfully before an immense concourse of spectators applauding this first manifestation of the creative power of the Saigon Dock.

Fukien Dockyard.—The Fukien Dockyard which is undertaking the repairing work for all the warships of this country is now asking the government for a subsidy in order to enable the authorities there to make both ends meet, as they have recently been suffering financial difficulties. It is reported that the request will probably be complied with by the government, as the ministry of the navy has decided to draw thirty thousand dollars a month from the proceeds collected as rent from the chartering of the ex-German and Austrian ships as a subsidy for the dockyard.

Ice Breakers, Japan.—The war office has decided to construct several large ice-breakers. This decision has been reached following the trial of the ice-breaker *Baikal.* When completed, these large ice-breakers will be used in maintaining communication with Saghalien in winter time.

New Fusan Ferry Steamers.—The department of railways has started its endeavors to improve the ferry service between Japan proper and Fusan, Chosen, by building two new boats for that service. Keels will be set about March 15th at Kobe for one of them to cost Y.3,000,000.

New Fishery Steamers.—Two new ships of 300 tons each will be built to the order of the department of agriculture and commerce in Japan at a cost of Y.550,000. The ships will be used for investigations in fishing waters.

Launching, Yokohama Dock.—A new vessel of 10,000 tons will be launched from the Yokohama Dock shortly. She will have a speed of 12 knots.

New Steamers, March, Japan.—Four new steamships were launched during the month of March in Japan, the *Matsuye Maru*, 7,280 tons, from the Yokohama Dock to the order of the N.Y.K.; the *Busho Maru*, 2,700 tons, from the Osaka Iron Works to the order of the O.S.K.; the *Iwate Maru* of 5,000 tons from the Mitsui Bussan Kaisha yards for private account and the *Koki Maru* of 5,600 tons from the Ishikawajima Yards to the order of Suzuki & Company. The total for the month is 21,380 tons and for the year commencing January 14 steamers totalling 78,620 tons.

New Torpedo Plant, Japan.—A new torpedo factory will be built at the Hiro branch of the Kure navy yard on an area to be reclaimed located west of the present machine shops. The reclamation work will take all of this year.

New Gunboats, Japan.—Construction on four second-class gun-boats, the *Seta, Katada, Hira* and *Hozu* has been commenced at the Kure Navy Yard.

SHIPPING

Sungari River Service.—The reorganized Wutung Steam Navigation Company with a capital of five million dollars has been officially registered in the ministry of communications as a semi-official corporation with its headquarters at Harbin. Its steamers will ply between the various ports of the Amur, the Sungari and the Nunkiang rivers in North Manchuria and the Russian Far East shortly.

New Chinese Line—Li Chuen-tai, a Cantonese merchant, has just organized a new steamship line which will be known as the Kongkow S. S. Co. Offices have been rented at No. 13 Foochow Road, and a 1,600-ton steamer has been purchased which will run between Shanghai, Hingwha, Chinchow and Foochow.

New Chinese Company, Shanghai.—A new navigation company is being organized at Shanghai by Mr. Y. K. Chu, and Mr. P. H. Chang, Chinese resident at Formosa, to run steamers between Shanghai, Fukien, Chekiang and other Chinese coast ports.

Toyo Kisen Kaisha.—An ordinary general meeting of shareholders of the Toyo Kisen Kaisha was held on 29th March, when a decision was reached to issue debentures to the value of 7 million yen through the Yasuda Bank and the following accounts for the last business term were ratified:

	Y.
Net profits	385,129
Brought over from preceding term ...	120,169
Amount transfered from dividend equalization fund	70,000
Total	1,205,290
Reserves	20,000
Dividend (10% per annum)	1,137,504
To be carried forward	47,794

New Steamer for C. M. S. N. C.—A new steamer launched in March has been built by the Yah Sung Shipbuilding Yard, Shanghai, to run between Shanghai, Changsha and Ichang under the flag of China Merchants' Steamship Navigation Company.

Chinese Shipping Expansion.—The Chien Sing Shipping Company, Shanghai, has added three steamers between Shanghai and Fukien, Shaoshing, Chienchow, etc.

WATERWORKS

Waterworks Expansion, Shanghai.—The Shanghai Native City Waterworks Company has ordered a new pumping equipment of 12,000,000 gals. daily capacity. The plant can supply 10,000,000 gallons but its rapid expansion has necessitated the installing of machinery of greater capacity.

Waterworks, Wuchow.—A water-works company is shortly to be established in Wuchang with a capital of $1,500,000. As soon as the ministry of agriculture and commerce authorizes the registration of this company, they will start operations.

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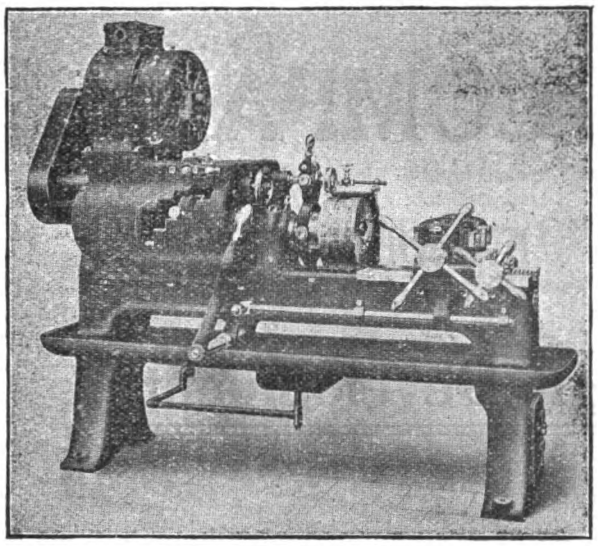

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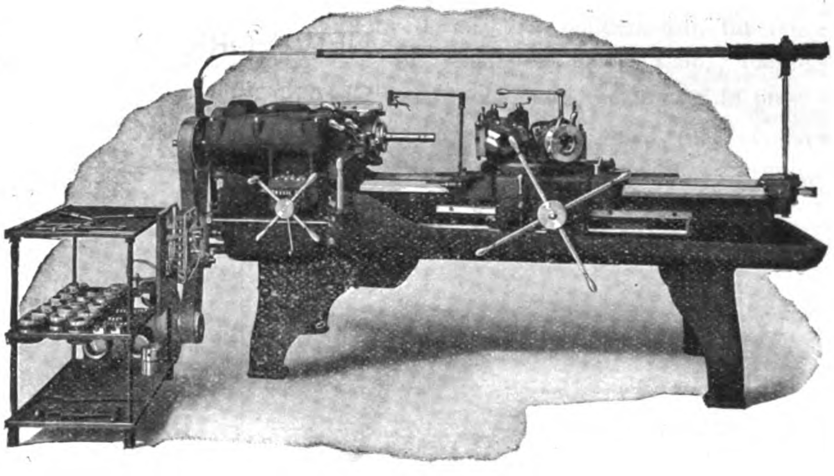

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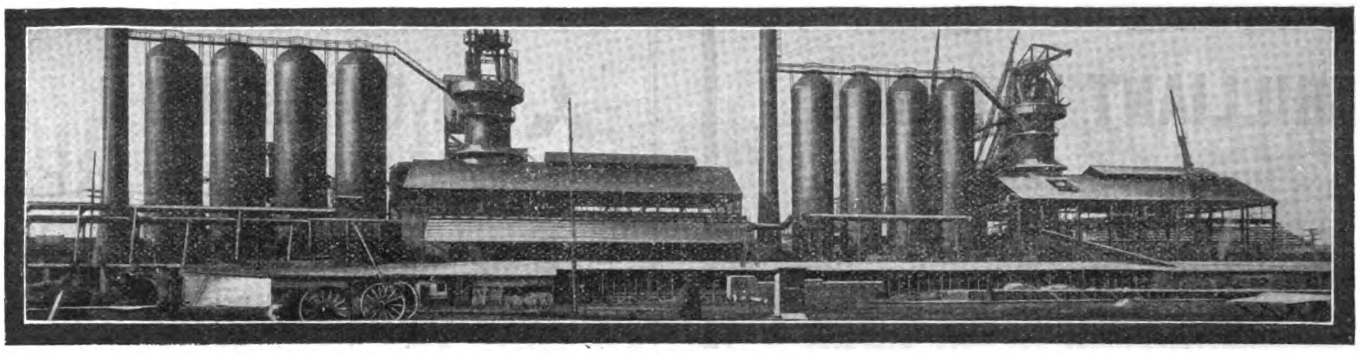

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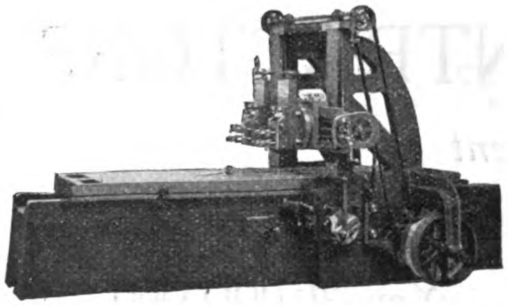

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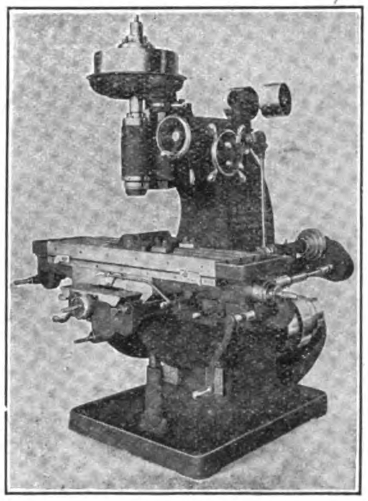

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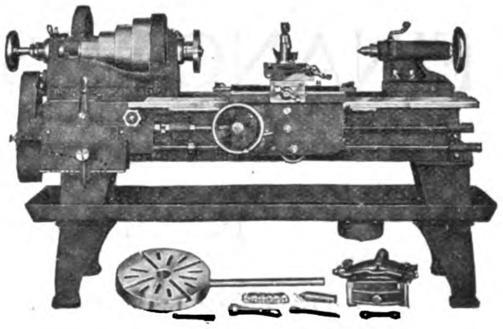

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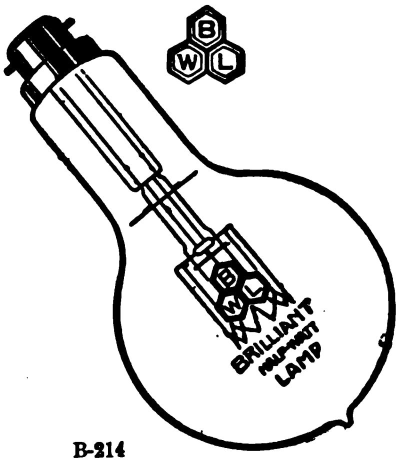

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CAPITAL, SURPLUS AND UNDIVIDED PROFITS: G. $14,000,000

OWNED BY THE NATIONAL CITY BANK OF NEW YORK

HEAD OFFICE: 60 WALL STREET, NEW YORK

LONDON OFFICE: 36 BISHOPSGATE, E.C.

LYONS OFFICE: 27 PLACE TOLOZAN

SAN FRANCISCO OFFICE: 232 MONTGOMERY STREET

BRANCHES:

CHINA
- CANTON
- HANKOW
- HARBIN
- HONGKONG
- PEKING
- SHANGHAI
- TIENTSIN

DOMINICAN REPUBLIC
- BARAHONA
- PUERTO PLATA
- SAN FRANCISCO DE MACORIS
- SAN PEDRO DE MACORIS
- SANCHEZ
- SANTIAGO
- SANTO DOMINGO

INDIA
- BOMBAY
- CALCUTTA
- RANGOON

JAPAN
- KOBE
- YOKOHAMA

JAVA
- BATAVIA
- SOURABAYA

PANAMA
- COLON
- PANAMA

PHILIPPINE ISLANDS
- CEBU
- MANILA

SPAIN
- MADRID
- BARCELONA

STRAITS SETTLEMENTS
- SINGAPORE

BRANCHES OF THE NATIONAL CITY BANK OF NEW YORK

ARGENTINA
- BUENOS AIRES
- ROSARIO

BELGIUM
- ANTWERP
- BRUSSELS

BRAZIL
- PERNAMBUCO
- PORTO ALEGRE
- RIO DE JANEIRO
- SANTOS
- SAO PAULO

CHILE
- SANTIAGO
- VALPARAISO

COLOMBIA
- BARRANQUILLA
- BOGOTA
- MEDELLIN

CUBA
- HAVANA AND 22 BRANCHES

ITALY
- GENOA

PERU
- LIMA

PORTO RICO
- PONCE
- SAN JUAN

SOUTH AFRICA
- CAPE TOWN

URUGUAY
- MONTEVIDEO

VENEZUELA
- CARACAS

Commercial and Travellers' Letters of Credit, Bills of Exchange and Cable Transfers bought and sold. Current accounts opened and Fixed Deposits in local and foreign currencies taken at rates that may be ascertained on application to the Bank.

N. S. MARSHALL, *Manager.*

1A KIUKIANG ROAD.

BANQUE DE L'INDO-CHINE.

Capital ... ... **Frs. 72,000,000**
Reserves ... ... **„ 70,000,000**

HEAD OFFICE: 15 BIS RUE LAFFITTE, PARIS.

Succursales et Agencies:

Bangkok	Haiphong	Mongtze	Pnom-Penh	Singapore
Battambang	Hankéou	Noumèa	Pondichery	Tientsin
Canton	Hanoi	Papeete	Saigon	Tourane
Djibouti	Hongkong	Peking	Shanghai	

Bankers:

IN FRANCE: Comptoir National d'Escompte de Paris, Credit Lyonnais; Banque de Paris et des Pays-Bas; Crédit Industriel et Commercial Société Génerale.

IN LONDON: The National Provincial and Union Bank of England, Ltd.; Comptoir National d'Escompte de Paris; Crédit Lyonnais.

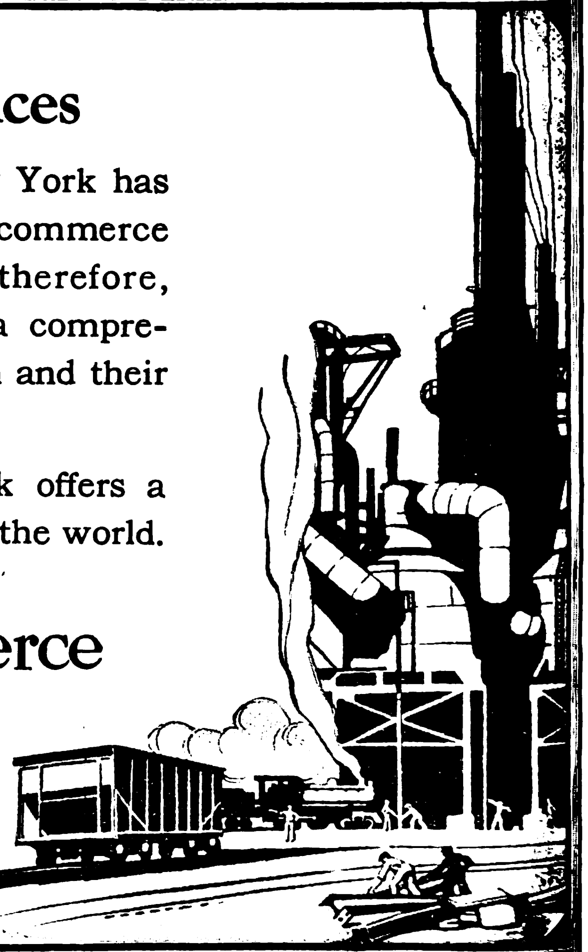
The Shanghai Agency undertakes all banking operations and exchange business; grants credits on goods and approved securities and receives deposits on current and fixed deposits according to arrangement.

L. ARDAIN, *Manager.*

American Banking Services

THE National Bank of Commerce in New York has close business relations with all phases of commerce and industry in the United States. It is, therefore, able to render to banks in other countries a comprehensive banking service of great value to them and their customers.

Through its Foreign Department the Bank offers a complete banking service to banks throughout the world.



National Bank of Commerce in New York

Capital paid up, $25,000,000
Surplus and Undivided Profits over $30,000,000
Resources over $500,000,000

NATIONAL BANK OF COMMERCE IN NEW YORK 1839

THE BANK OF TAIWAN LTD.

INCORPORATED BY SPECIAL IMPERIAL CHARTER, 1899

Capital Subscribed	Yen	60,000,000
Capital Paid-up	,,	45,000,000
Reserve Funds	,,	9,680,000

President: KOJURO NAKAGAWA, Esq. Vice-President: SHUNROKURO MORI, Esq.

DIRECTORS:

TSUNEKICHI IKEDA, Esq.
GUNJI KAWASAKI, Esq.
KUMEMATSU MORINAGA, Esq.
MASUMI ESAKI, Esq.
TADASU HISAMUNE, Esq.

Head Office: TAIPEH, FORMOSA (TAIWAN)

BRANCHES:

JAPAN: Tokio (General Affairs Department), Kobe, Moji, Osaka, Yokohama.
TAIWAN: Keelung, Tainan, Takow, and 11 other points.
CHINA: Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
OTHERS: Bangkok, Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

AGENTS AND CORRESPONDENTS:

In the Principal Cities and Towns throughout the World.

LONDON BANKERS:

BARCLAYS BANK, LTD. LLOYDS BANK, LTD. LONDON COUNTY WESTMINSTER & PARR'S BANK, LTD.

TOKYO BRANCH:

No. 1, Eiraku-cho Ni-chome, Kojimachi-ku.

Telegraphic Address: "TAIWANGINK."

Phone Nos. 1060, 1061, 1062, 1063, 1064, 1065, 1066, 446, 447, 448 and 449, Marunouchi.

Interest allowed on Fixed Deposits, and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts.

Every description of Exchange and General Banking business transacted.

Special facilities are available for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

Banque Industrielle de Chine

CAPITAL AUTHORIZED - - - - - - -	Frs. 250,000,000
CAPITAL SUBSCRIBED - - - - - - -	„ 150,000,000
CAPITAL PAID-UP - - - - - - - -	„ 75,000,000
RESERVES - - - - - - - - - - -	„ 40,000,000

One-third of the Capital, i.e., Francs 50,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese Republic on the 11th January, 1913.

President: ANDRE BERTHELOT

General Manager: A. J. PERNOTTE

HEAD OFFICE: 74 RUE SAINT LAZARE, PARIS.

Branches:

ANTWERP
BATAVIA
BORDEAUX
CANTON
DUNQUERQUE
FOOCHOW
HAIPHONG
HANKOW
HANOI
HONGKONG
LE HAVRE
LONDON
LYONS
MARSEILLES
MUKDEN
NEW YORK
PEKING
PNOM PENH
ROTTERDAM
SAIGON
SHANGHAI
SINGAPORE
SWATOW
TIENTSIN
TSINANFU
VLADIVOSTOCK
YOKOHAMA
YUNNANFU

BANKERS:

IN LONDON: The London Joint City and Midland Bank, Ltd., London.
IN FRANCE: Societe Generale pour favoriser le Developpement du Commerce & de l'Industrie en France.
IN ITALY: Banca Commerciale Italiana. Credito Italiano.

TAELS, DOLLARS, GOLD ACCOUNTS

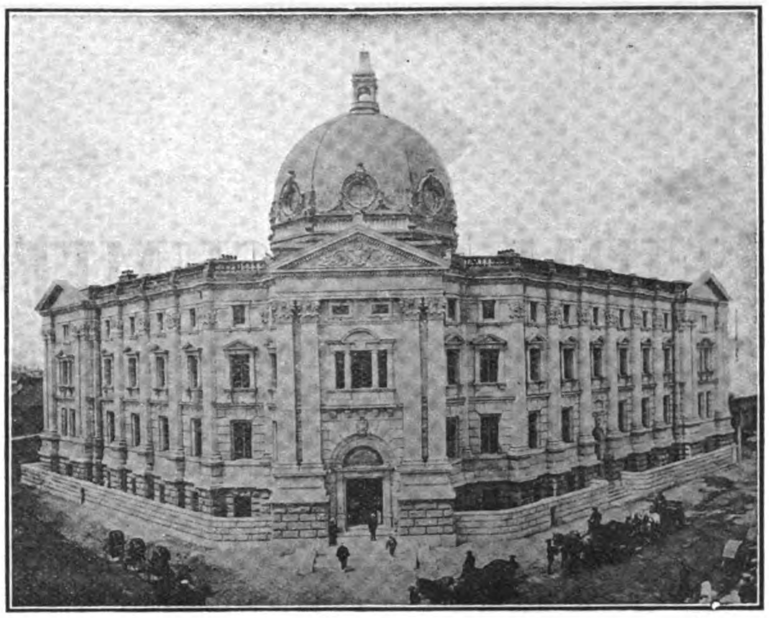
Interest allowed on current accounts in Gold or local currency.
Savings account and fixed deposits. Terms on application.
Every description of Banking and Exchange business transacted.

B. ADAM, *Manager.*

1 French Bund, Shanghai.

Capital (Fully Paid-Up): Yen 100,000,000

Reserve Fund: Yen 53,000,000



HEAD OFFICE, YOKOHAMA

CORRESPONDENTS AT ALL THE CHIEF COMMERCIAL CITIES IN THE WORLD

The Yokohama Specie Bank, Ltd.

Established 1880

DIRECTORS:

President: NAKAJI KAJIWARA, Esq.
Vice-President: SHIMAKICHI K. SUZUKI, Esq.
NAGATANE SOMA, Esq.
YUKI YAMAKAWA, Esq.
MASNOSKE ODAGIRI, Esq.
BARON KOYATA IWASAKI
KONOJO TATSUMI, Esq.
FUKUSABURO WATANABE, Esq.
IWAO MATSUKATA, Esq.
MORINOSUKE MITSUI, Esq.
BARON KAISAKU MORIMURA
REITARO ICHINOMIYA, Esq.
KENJI KODAMA, Esq.
KIMPEI TAKEUCHI, Esq.
TARO HODSUMI, Esq.

Head Office: YOKOHAMA
Manager: H. MORI., Esq.

TOKYO BRANCH
No. 1, Itchome, Eirakucho, Kojimachi-ku.
Manager: K. MOGAMI, Esq.

BRANCHES AND AGENCIES.

Batavia	Dairen	Hongkong	Los Angeles (*sub-office of San Francisco Branch*)	Nagasaki	Rangoon	Shanghai	Saigon
Bombay	Fengtien	Honolulu		Newchwang	Rio de Janeiro	Shimonoseki	Tientsin
Buenos Aires	Hamburg	Kaiyuang		New York	Saigon	Singapore	Tsingtau
Calcutta	Hankow	Kobe	Lyons	Osaka	San Francisco	Sydney	Tsinan
Changchun	Harbin	London	Manila	Peking	Seattle	Sourabaya	Vladivostock

LONDON BANKERS

LLOYD'S BANK, LIMITED
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LIMITED
NATIONAL PROVINCIAL AND UNION BANK OF ENGLAND, LIMITED
LONDON JOINT CITY AND MIDLAND BANK, LIMITED

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted.
For particulars, apply to the managers.

THE FIRM OF SUMITOMO

OWNERS OF BESSHI COPPER MINE, COAL MINE, ETC.

MANUFACTURERS OF

Tubes, Plates, Sheets and Bars of Copper Brass, Bronze and other Copper Alloys, Solid Drawn Steel Tubes, Nails, Electric Wires and Cables, Artificial Fertilizer, etc.

WORKS AND DEPARTMENTS

General Head Office	Osaka	Tokyo Sales Department	Tokyo
Besshi Copper Mine Office	Niihama, Iyo	Kure Sales Department	Kure near Hiroshima
Copper Sales Department	Osaka & Kobe	Yokosuka Sales Department	Yokosuka
Warehouses	Osaka, Kobe & Toyko	Hakata Sales Department	Hakata
Wakamatsu Coal Department	Wakamatsu, Chikuzen	The Sumitomo Yoko	Shanghai
Copper Works	Osaka & Amagasaki	The Sumitomo Yoko	Hankow
Electric Wire and Cable Works	Osaka	The Sumitomo Yoko	Tientsin
Fertilizer Manufactory	Niihama, Iyo	The Sumitomo Bank of Hawaii	Honolulu
Sapporo Mine Office	Sapporo, Hokkaido	The Sumitomo Bank of Seattle	Seattle

THE SUMITOMO STEEL WORKS, LIMITED

OSAKA, JAPAN

President: Baron K. SUMITOMO

MANUFACTURERS OF

Steel Ingots, Steel Forgings, Steel and Iron Castings of every description for Railways, Shipbuilding Yards, Mines, Hydraulic, Electric and other Engineering Works, etc. etc.

THE SUMITOMO BANK, LIMITED

OSAKA, JAPAN

Cable Address: "SUMITBANK"

President: Baron K. SUMITOMO

Capital Subscribed	Yen 70,000,000	Reserve Fund	Yen 12,000,000
Capital Paid-up	„ 40,000,000	Deposits (30th June, 1920)	„ 360,000,000

HOME BRANCHES:

Tokyo, Yokohama, Nagoya, Kyoto, Kobe, Hyogo, Onomichi, Niihama, Kure, Hiroshima, Yanai, Shimonoseki, Moji, Kokura, Wakamatsu, Hakata, Kurume.

FOREIGN OFFICES:

New York, San Francisco, Shanghai, Hankow, Bombay, London, Seattle (Affiliated Bank), Hawaii (Affiliated Bank).

AGENTS:

National City Bank of New York, New York. Lloyds Bank Ltd., London.

The Bank buys, sells and receive for collection Drafts and Telegraphic Transfers, issues Commercial and Travellers Letters of Credit available in all important parts of the world, besides doing general Banking business.

THE

MITSUBISHI BANK,

LIMITED

CAPITAL SUBSCRIBED - Yen 50,000,000
CAPITAL PAID-UP - - - Yen 30,000,000

PRESIDENT:

Baron Koyata Iwasaki

MANAGING DIRECTORS:

Mr. Manzo Kushida — Mr. Mikitaro Kikuchi
Mr. Kiyoshi Sejimo — Mr. Takeo Kato

HEAD OFFICE:

No. 1 Yayesucho Itchome, Kojimachi-ku,
Tokyo, Japan.

BRANCH OFFICES:

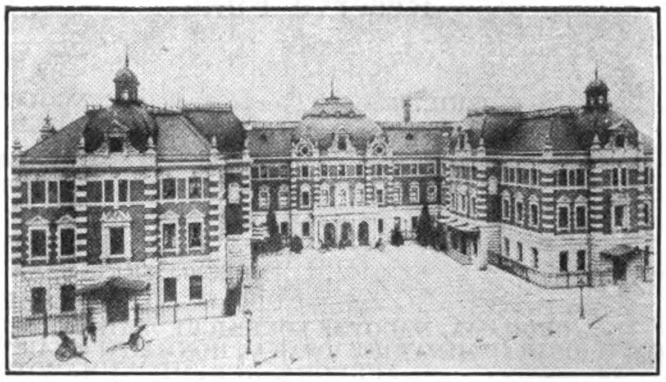
Fukagawa (Tokyo), Marunouchi (Tokyo), Nihombashi (Tokyo), Osaka, Nakanoshima (Osaka), Kobe, Kyoto, Nagoya, Shanghai, New York and London.

General Banking and Exchange Business

Agents for Hongkong and Shanghai Banking Corporation

THE MITSUI BANK, LTD.

The Oldest Bank in Japan, Founded in 1680



Capital Subscribed............Y. 100,000,000.00
Capital Paid-Up....................Y. 60,000,000.00
Reserve Fund (Jan. 1921)......Y. 27,000,000.00

HEAD OFFICE:

No. 1 Suruga-cho, Nihonbashi-ku,
TOKYO

BOARD OF DIRECTORS:

GENYEMON MITSUI, Esq. (*President*); SEIHIN IKEDA, Esq., UMEKICHI YONEYAMA, Esq., NAOJIRO KIKUMOTO, Esq. and OTOHIKO MAJIMA, Esq. (*Managing Directors.*)

MORINOSUKE MITSUI, Esq., TOMITARO HARA, Esq., KANETARO KISHIMOTO, Esq., HIROKICHI KAMESHIMA, Esq. and KIKUSABURO FUKUI, Esq. (*Directors*).

Branches:

OTARU, FUKAGAWA (Tokyo), HAKOZAKI (Tokyo), YOKOHAMA, NAGOYA, KYOTO, OSAKA, NISHI (Osaka), KAWAGUCHI (Osaka), NAKANOSHIMA (Osaka), KOBE, HIROSHIMA, SHIMONOSEKI, MOJI, WAKAMATSU, FUKUOKA, NAGASAKI, SHANGHAI.

Foreign Agents:

London: Barclays Bank, Ltd.
London Joint City & Midland Bank, Ltd.
New York: The National City Bank of New York.
The Chase National Bank.
Bankers Trust Co.
Paris: Banque de l'Union Parisienne.
Comptoir National d'Escompte de Paris.
Bombay: National Bank of India, Ltd.

THE DAI-ICHI GINKO, LTD.

(FORMERLY THE FIRST NATIONAL BANK)

ESTABLISHED 1873

Subscribed Capital - - -	**Yen 50,000,000.00**
Paid-Up Capital - - - -	**Yen 29,525,000.00**
Reserve Fund - - - -	**Yen 28,000,000.00**

Y. SASAKI, *President*

K. ISHII, *Managing Director.* Y. NOGUCHI, *Managing Director.* S. SUGITA, *Managing Director.*

HEAD OFFICE:

No. 1 KABUTO-CHO, NIHONBASHI-KU, TOKYO.

T. AKASHI, *Manager*

CITY BRANCHES:

ISECHO, SHIN-OSAKACHO, FUKAGAWA, MARUNOUCHI.

HOME BRANCHES:

YOKOHAMA, NAGOYA, YOKKAICHI, KYOTO, NISHIJIN (KYOTO), GOJO (KYOTO), FUSHIMI, OSAKA, NISHIKU (OSAKA), MINAMIKU (OSAKA), HONMACHI (OSAKA), KOBE, HYOGO, HIROSHIMA, SHIMONOSEKI, CHOFU, MOJI, FUKUOKA, KURUME, KUMAMOTO, HAKODATE, OTARU, SAPPORO, MURORAN.

BRANCHES IN COREA:

SEOUL, FUSAN.

LONDON & NEW YORK BANKERS:

London: The London County Westminster & Parr's Bank, Ltd.; The London Joint City & Midland Bank, Ltd.; The Yokohama Specie Bank, Ltd.

New York: The National City Bank of New York.; The National Bank of Commerce in New York.; The Yokohama Specie Bank, Ltd.

CORRESPONDENTS:

The Bank, in addition to its own Branches, has numerous Agencies or Correspondents in the principal Cities and Towns at Home and Abroad.

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Capital fully paid up	**P. 6,750,000.00**
Reserve funds	**P. 4,900,000.00**

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

LONDON: National Bank of Scotland, Ltd.
SPAIN: Banco Hispano-Americano
HONGKONG: Netherland India Commercial Bank
SAN FRANCISCO: Wells Fargo Nevada National Bank
NEW YORK: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.
PARIS: Comptoir National d'Escompte
AUSTRALIA: Bank of New South Wales
SHANGHAI: Bank of Canton, Ltd.
CHICAGO: Continental & Commercial National Bank
JAPAN: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, *President*

No. 10 PLAZA DE CERVANTES, MANILA, P. I.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	...	$15,000,000
Reserve Funds:	Sterling ...	£2,500,000
	Silver ...	$21,500,000
Reserve Liability of Proprietors	...	$15,500,000

Court of Directors:

G. T. M. EDKINS, Esq.
Chairman

G. M. DODWELL, Esq.
Deputy Chairman

D. G. M. BERNARD, Esq.
A. S. GUBBAY, Esq.
Hon. Mr. P. H. HOLYOAK
A. O. LANG, Esq.
Hon. Mr. E. V. D. PARR
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.
H. P. WHITE, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . . Hon. Mr. A. G. STEPHEN

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY	MALACCA
BANGKOK	MANILA
BATAVIA	NAGASAKI
BOMBAY	NEW YORK
CALCUTTA	PEKING
CANTON	PENANG
COLOMBO	RANGOON
FOOCHOW	SAIGON
HANKOW	S. FRANCISCO
HARBIN	SHANGHAI
ILOILO	SINGAPORE
IPOH	SOURABAYA
JOHORE	TIENTSIN
KOBE	TSINGTAO
KUALA LUMPUR	VLADIVOSTOCK
LONDON	YOKOHAMA
LYONS	

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

THE JUGO GINKO, Ltd.

(THE FIFTEENTH BANK)

TOKYO, JAPAN

Telegrams: "Jugoginko, Tokio"

Capital Subscribed Y. 100,000,000 Capital Paid-Up Y. 49,750,000 Reserve Funds Y. 17,478,600

President:
HON. IWAO MATSUKATA

Vice-President:
MASAYASU NARUSE, Esq.

Managing-Directors:
YUTSUHA SATO, Esq. KANESATO AIKO, Esq.

Directors:
BARON KOKICHI SONODA
MARQUIS YORIMICHI TOKUGAWA
VISCOUNT YUKIYOSHI AOYAMA
HON. NAGAYUKI ASANO
YOSHITERU SHIMIZU, Esq.
MASAO MATSUKATA, Esq.
KIYOSUMI TANIKAWA, Esq.

Auditors:
MASAKAZU HISANO, Esq.
BARON MICHITOMO IWAKURA
NAOYOSHI YAMAMOTO, Esq.
TAKAJI SEKIGUCHI, Esq.
TAKAYUKI IMAI, Esq.

***Head Office Manager:* Kiyosumu Tanikawa, Esq.**

LONDON BANKS AND AGENTS:

LAZARD BROTHERS & CO., LTD. UNION DISCOUNT CO. OF LONDON, LTD.
LONDON COUNTY WESTMINSTER AND PARR'S BANK, LTD.

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

Industrial Bank of Japan, Limited

(NIPPON KOGYO GINKO)

Incorporated by Special Charter in 1902 to Encourage Foreign Investments

CAPITAL SUBSCRIBED - - - - -	Yen 50,000,000
CAPITAL PAID-UP - - - - - -	Yen 45,000,000

HEAD OFFICE:

MARUNOUCHI, TOKYO. CABLES "KOGIN," TOKYO

BRANCHES:

TOKYO: NIHONBASHI
OSAKA: KORAIBASHI
KOBE: NAKAMACHI

H. HIJIKATA, Esq., President
Y. ONO, Esq., Vice-President
K. IYANAGA, Esq., Director
T. IWASA, Esq., Director
KOZO MATSUMOTO, Esq.

AUDITORS:

NAGATANE SOMA, Esq.
KINTARO HATTORI, Esq.
KINICHI KAWAKAMI, Esq.
TAICHI OHBA, Esq.

All descriptions of general banking, exchange, both foreign and domestic, and trust and corporation financial business transacted.

Correspondents in the principal cities at home, and in London, Paris, New York, and San Francisco.

BUSINESS TRANSACTED:

1.—Loans on the security of public bonds of debentures and shares, estates (Zaidan), specified land and buildings.
2.—Subscription and underwriting public bonds or debentures.
3.—Deposits and safe custody of valuables.
4.—Trust company business.
5.—Discounting of bills.
6.—Foreign exchange business.
7.—Other banking business sanctioned by the Minister of State for Finance in accordance with Law of Ordinance.

AMERICA-JAPAN-CHINA TRUST COMPANY, LIMITED

HEAD OFFICE:

6 Nakabashi Izumicho, Kyobashi-ku, Tokyo.

BRANCH OFFICE:

11 Imabashi Nichome, Higashiku, Osaka.

CAPITAL - - Y. 50,000,000.00

Directors:

Michitaka Sugawara, *Chairman*
Seiji Nawa, *Managing Director*
Toyotsune Mikami
Count Kinjiro Hirosawa
Wu Ting Chang
Kenji Imanishi, *Managing Director*
Taiji Arai
Seishichi Iwasaki
Saburosuke Fujisaki
F. N. Shea

Auditors:

Kanzo Matsuo, Standing
Toyohiko Kuki
Motosaburo Kaneko
Takayoshi Kondo

Councillors:

Raizo Kanda
Katsutaro Kamada

Principal Business of this Company as follows:

1. Financing of Domestic and Foreign Enterprises.
2. Underwriting Public Bonds, Debentures and other Securities.
3. Guaranteeing Loans, Debts and Credits.
4. Issuing Letters of Credit and Accepting Bills.
5. Assisting in the Organization of various enterprises and in the financial re-adjustment of Companies.
6. All other kinds of Trust Business.

THE ROYAL BANK OF CANADA

HEAD OFFICE, MONTREAL.

LONDON, ENG. PRINCES ST., E.C.

NEW YORK. 68, WILLIAM ST.

PARIS, FRANCE. THE ROYAL BANK OF CANADA (FRANCE)

BARCELONA. PLAZA DE CATALUNA 6

715 BRANCHES.

617 Branches in Canada and Newfoundland, also

98 FOREIGN BRANCHES.

ARGENTINA Buenos Aires.

BRAZIL Rio de Janeiro, Santos, Sao Paulo.

URUGUAY Montevideo.

VENEZUELA Caracas, Ciudad Bolivar. Maracaibo, Puerto Cabello.

COLOMBIA Barranquilla.

COSTA RICA San José.

WEST INDIES

CUBA—Havana (6 Branches), Antilla, Banes, Bayamo, Caibarien, Camaguey, Camajuani, Cardenas, Ciego de Avila, Cienfuegos, Cruces, Cueto, Florida, Guantanamo, Jatibonico, La Maya, Manzanillo, Matanzas, Moron, Nuevitas, Palma Soriano, Pinar del Rio, Puerto Padre, Sagua la Grande, Sancti Spiritus, Santa Clara, Santiago de Cuba, and at fifteen other points.

PORTO RICO—San Juan, Mayaguez and Ponce. **HAITI**—Port-au-Prince.

DOMINICAN REPUBLIC—S. Domingo, La Romana, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros.

MARTINIQUE—Fort de France, Trinité.

GUADELOUPE—Pointe-à-Pitre and Basse Terre.

BRITISH WEST INDIES— Antigua, Bahamas, Barbados, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Kitts, Trinidad and Tobago.

BRITISH GUIANA—Georgetown, New Amsterdam, &c.

BRITISH HONDURAS—Belize.

CAPITAL PAID UP & RESERVES $40,000.000
TOTAL RESOURCES OVER - - $600,000,000

The First National Bank of Boston

Transacts commercial banking business of every nature

Correspondence Solicited

Capital, Surplus and Profits

$37,500,000

THE BANK OF CHOSEN

Capital Subscribed - - - Yen 80,000,000
Capital Paid-up - - - Yen 50,000,000

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Deputy-Governor : T. Kano, Esq.

Directors :

S. Ohta, Esq. S. Katayama, Esq.
S. Yoshida, Esq. S. Kakei, Esq.

Head Office: SEOUL (Chosen)

FOREIGN DEPARTMENT : TOKYO

(All communications relating to correspondence arrangements and the Bank's general foreign business to be addressed to the Foreign Department)

Branches:

Japan Proper—Tokyo, Osaka, Kobe, Shimonoseki
Korea—Chemulpo, Pyengyang, Fusan, Wonsan, Taiku, Chinnampo, Kunsan, Mokpo, Hoilyong, Chongjin
Manchuria—Antung, Fengtien (Mukden), Dairen, Yingkow (Newchwang), Changchun, Harbin, Tiehling, Liaoyang, Ryojun, Kaiyuan, Chengchiatun, Szupingchieh, Fuchiatien, Kirin, Lungchingtsun
China Proper—Shanghai, Tientsin, Tsingtao, Tsinan
Siberia—Vladivostock, Alexandrofsky Post

NEW YORK AGENCY :

The City Investing Building, 165 Broadway, New York City

LONDON REPRESENTATIVE :

Gresham House, 24 Old Broad Street, London, E. C. 2

Correspondents:

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Cable Address:
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Code Used:
A. 1., A.B.C. 5th, Western Union, Bentley's Complete Phrase

MITSUBISHI SHOJI KAISHA, LD.

(MITSUBISHI TRADING CO., LTD.)

Capital, fully paid-up - - - Y. 15,000,000

Head Office:

MARUNOUCHI, TOKYO.

Importers and Exporters, Manufacturers, Commission Merchants, Brokers, Ship Owners.

EXPORTING:

Coal, Copper and all Other Descriptions of Metals, Minerals and Cereals, Chemicals, Oil, Paper, Glass, Canned Fish, Silk Goods, and General Oriental Products and Merchandise

IMPORTING:

Iron, Steel, Machinery, Machine Tools, Chemicals, and General Merchandise

ANNUAL PRODUCTION:

Electrolytic Copper Ingots	20,000	Tons
Pig Iron	100,000	,,
Steel	50,000	,,
Coal	3,500,000	,,

COLLIERIES:

Takashima, Ochi, Yoshinotani, Kishidake, Namazuta, Shinnew, Hojo, Kanada, Kamiyamada, Ashibetsu, Bibai, O-Yubari, and Sakito

BRANCHES and AGENCIES:

Tokyo, Yokohama, Nagoya, Osaka, Kobe, Moji, Wakamatsu, Karatsu, Nagasaki, Otaru, Tsuruga, Kure, Muroran, Hakodate, Kushiro, Vladivostok, Dairen, Kirin, Harbin, Peking, Shanghai, Hankow, Hongkong, Canton, Tientsin, Tsingtao, Tsinan, Singapore, London, Paris, Lyon, Marseilles, Berlin, New York, Seattle.

STEAMSHIP DEPARTMENT—KOBE

Fleet Owned	25,000	Tons	Gross
Chartered Steamers	12,000	,,	,,

Regular and Irregular Routes between home ports and Chinese and South Sea Islands Ports, etc.

MIIKE COAL

The Finest Steaming and Bunker Coals of the Far East are mined from the famed Miike, Tagawa, Yamano, Sunakawa and Kawakami Collieries operated by the

MITSUI

MINING COMPANY, LTD.

HEAD OFFICE:
No. 1 Surugacho, Nihonbashi-Ku,
TOKYO, JAPAN

Capital - - Yen 100,000,000

Annual Coal Output is equal to one-quarter of Total Japanese Mines.

LEAD, SILVER, GOLD, ZINC, COPPER, SPELTER, SULPHUR, COKE, IRON, CHEMICALS and DYES

Are produced from the Company's, KAMIOKA, Lead, Silver and Zinc Mine; SANO, Copper and Zinc Mine; KUSHIKINO, Gold Mine; KONGO, Tungsten Mine; IWAONOBORI, Sulphur and Metal Mine; Zinc Plants, Coke, Dyestuffs and By-products Establishments in Miike.

***Sole Agents for our Products*:**

MITSUI BUSSAN KAISHA, Ltd.

(MITSUI & Co., Ltd.)

Tokyo, London, New York, Shanghai, Hongkong, and other Principal Commercial Centres of the World.

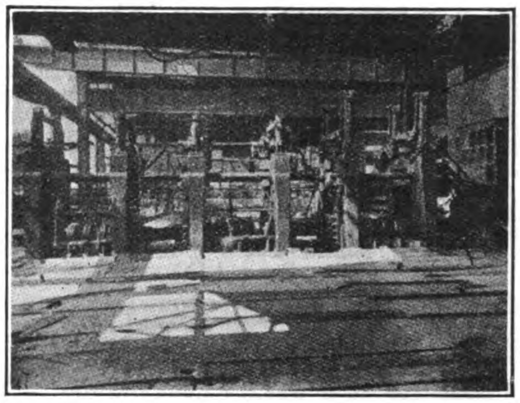
DORMAN, LONG & Co., Ltd.

Steel Manufacturers,
Bridge Builders & Constructional Engineers,

MIDDLESBROUGH, ENGLAND.

Telegraphic Address:
"DORMAN-MIDDLESBROUGH."

Codes —
BENTLEY'S; A.B.C. (5th and 6th Editions) and WESTERN UNION (Universal & 5 Letter).



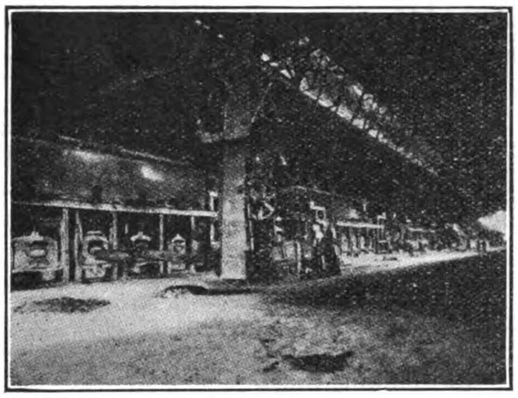
Britannia Steelworks,

MIDDLESBROUGH.

Open-Hearth STEEL JOISTS, ANGLES and OTHER SECTIONS, RAILS.

Open-Hearth STEEL BARS in long lengths suitable for

FERRO-CONCRETE WORK, BILLETS AND BLOOMS.



Redcar Iron and Steel Works, Redcar.

Steel Works and Rolling Mill Dept.

Plate Mills capable of Rolling all Plates for **Shipbuilding and Engineering** purposes, from $\frac{3}{16}$" to 1½" thick, fulfilling the requirements of British Standard Tests, Board of Trade, Admiralty, Lloyds, etc. **Universal Plates** with Rolled Edges 12" to 42" wide up to 90-ft. long.

Clarence Steel Works and Rolling Mills,

PORT CLARENCE.

High-class Steel in quality from Dead Soft to 1.25 per cent. Carbon for the manufacture of Wire, Springs, Files, Saws, Forgings, Stampings, Rifle Barrels, Agricultural Implements, etc. Conductivity Steel to stand General Post Office, India Office and British Railway Tests.
Electrically Melted Steels of all Carbons.

NICKEL ALLOY STEEL.

Flange and Bulb Head Rails, Billets, Slabs, etc.

Ayrton Rolling Mills,

MIDDLESBROUGH.

Galvanized Corrugated and Plain Sheets,

Ridging, Gutters, Downpipes, Fountain Heads, etc.

Ordinary Galvanized Fittings kept in Stock.

Cleveland Wire Mills,

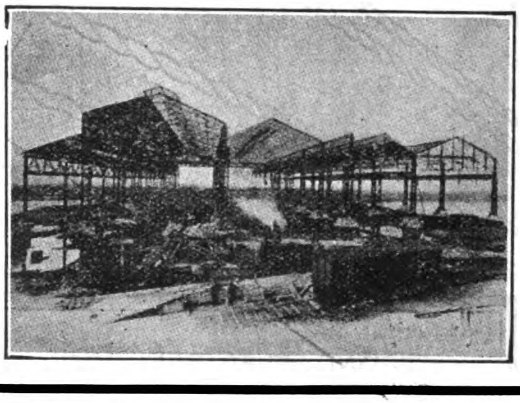
MIDDLESBROUGH.

Wire Rods and all kinds of Wire for all purposes. Telegraph & Telephone Wire. Annealed Core Wire. Galvanized Seizing Wire. Galvanized Rigging Wire. Galvanized & Varnished Fencing Wire. Galvanized Strand & Barb Wire. Galvanized Cable Wire.

Galvanized Patent Steel Hawser Wire to Lloyd's Tests.

Bright Patent and Plough Steel Rope Wire.

The Mills can supply the **longest single length** of Rods or Wire without weld or joint of anyone in the Trade.



Constructional Department,

MIDDLESBROUGH.

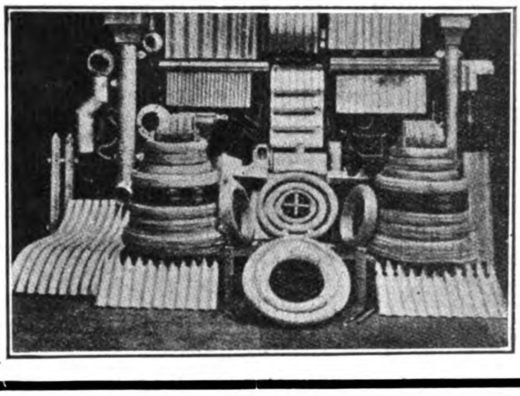
STRUCTURAL STEELWORK

for all purposes.

Speciality:

STEEL FRAME BUILDINGS

for home and abroad.



AGENTS:—

REPRESENTATION for BRITISH MANUFACTURERS, LTD.

CHING MING BUILDINGS,
BRITISH CONCESSION,
HANKOW.

43 KIANGSE ROAD,
SHANGHAI.

REGINES BUILDINGS,
LEGATION STREET,
PEKING.

Smoke! Smoke!! Smoke!!!

The "Tas Hee" & "Szy Hee" brands of cigarettes.

They are not to be surpassed in excellence, selected from the most superior tobaccos, they will be found pleasing smokes by all. Connoisseurs agree that they are not to be excelled for their fragrance

中國南洋兄弟烟草有限公司啟

Try them and you will like them.

Obtainable at very moderate prices from most stores and stalls.

Manufactured by the Canton Nanyang Brothers Tobacco Co., Ltd., 10 Dent Road

Head Office: 12 Nanking Road

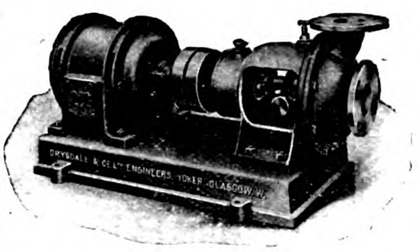
"BON ACCORD" **CENTRIFUGAL PUMPS**

Self-Lubricating Centrifugal PUMPING ENGINES.

MARINE and LAND TYPES for all DUTIES.

HIGH SPEED ENGINES for driving DYNAMOS, FANS, ETC.

Try "Bon Accord" Packing for the Stuffing Boxes of your Pumps and Engines.



"O" Type Single Suction Electrically Driven Pump

DRYSDALE & CO., LTD.,
YOKER, GLASGOW, SCOTLAND.

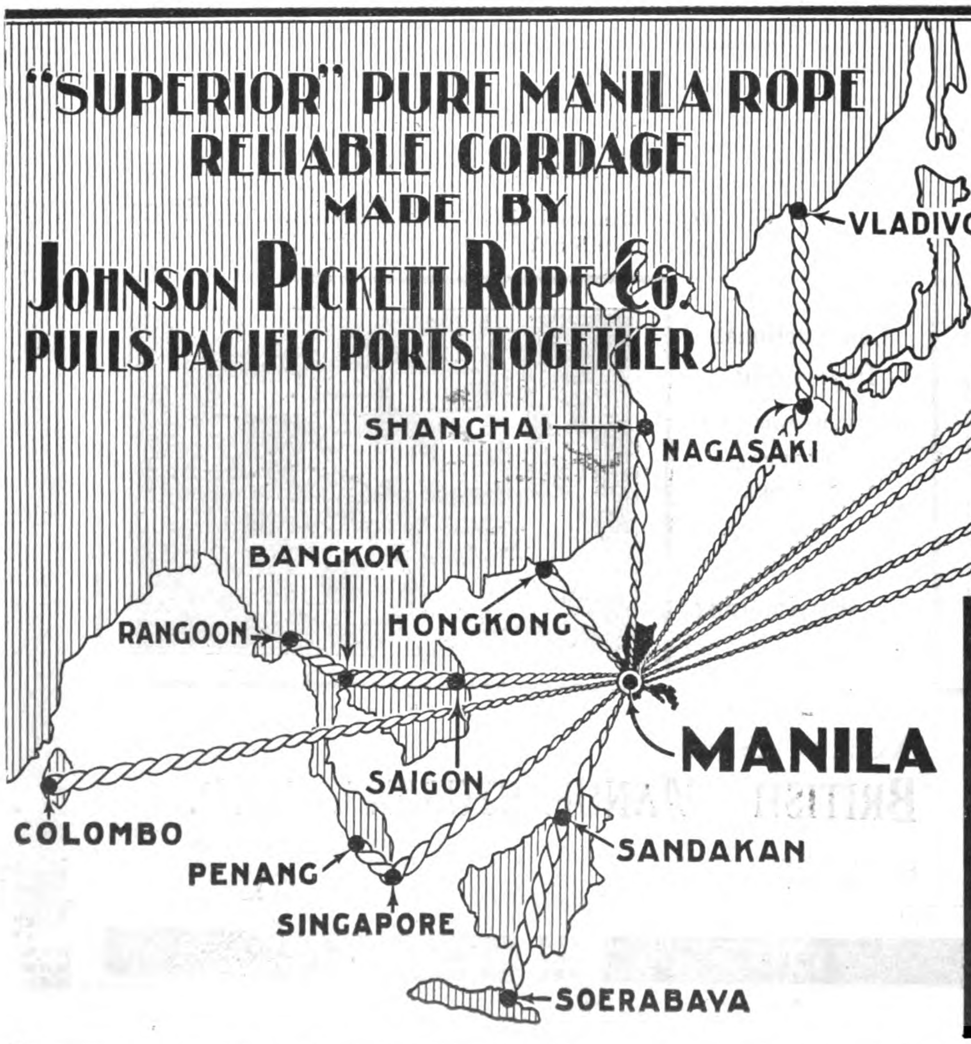
PITTSBURGH STEEL CO.
Pittsburgh, Pennsylvania, U.S.A.
Manufacturers of "PITTSBURGH PERFECT"
OPEN HEARTH STEEL PRODUCTS
INCLUDING

Galvanized Wire — Bolt and Rivet Wire
Bright Hard Wire — Galvanized Barbed Wire
Bright Nail Wire — Wire Nails
Annealed Wire — Fence Staples
Bright Soft Wire

Pig-Iron, Blooms, Billets, Wire Rods, Hard Spring Coil Wire, Twisted Cable Wire, Bale Ties, Steel Hoops, Steel Bands, Cotton Ties and Fabricated Stock, Poultry and Lawn Fencing.

We are prepared to give PROMPT SERVICE, and solicit your inquiries accompanied by complete specifications.

ADDRESS:
PITTSBURGH STEEL CO.
EXPORT DEPARTMENT:
EQUITABLE BUILDING, NEW YORK, U. S. A.
Cable Address: "PITTSTEEL."



STRONG FLEXIBLE CORDAGE
MADE OF
HIGH-GRADE PURE MANILA
FIBER
THE JOHNSON PICKETT QUALITY
CAN BE DEPENDED UPON

101 LARA — MANILA, PHILIPPINES

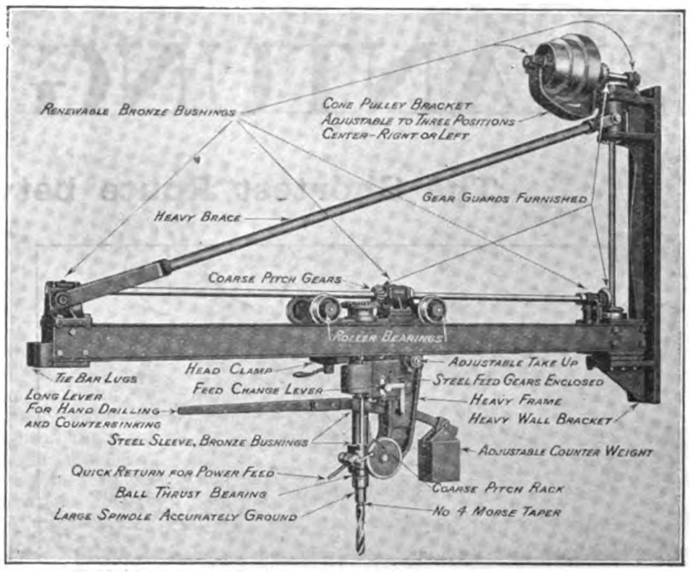
A Real Machine Tool

This Wall Radial Drill is a real machine tool in every sense of the word. It is properly designed and carefully constructed of the finest materials obtainable. Every feature has been added to insure ease of operation and accurate output. Your factory walls from the column of this machine and it proves as rigid under strain as any machine on the floor.

You save in first cost, floor space and operating time by insisting on L-F Wall Radial Drills.

Get the full details from bulletin. They make interesting reading.

GET IT TO-DAY.



MADE IN FOUR STANDARD SIZES

Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.

LYND-FARQUHAR CO.

Machine Tools of Quality.

419-425 ATLANTIC AVE.,

Boston 9, Mass., U.S.A.

BETTS HEAVY DUTY PLANING MACHINE.

Of interest to shipyards, steel mills, and all works having to do extra large size heavy duty machine work.

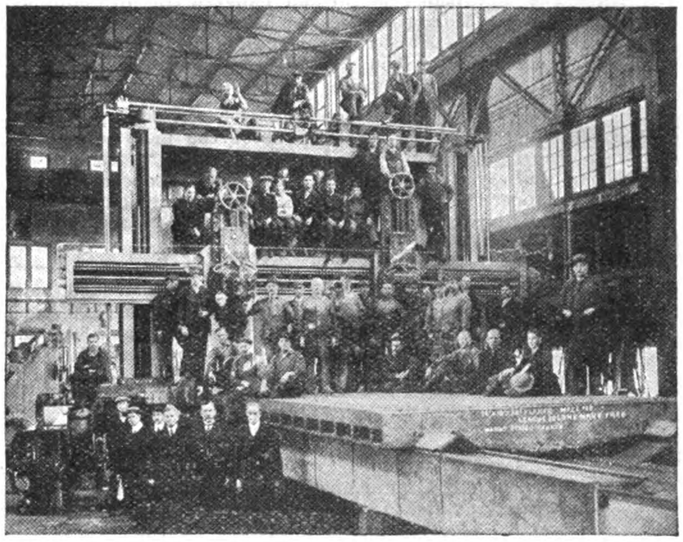
This illustration shows the 16′ × 10′ × 30′ stroke planing machine made for the League Island Navy Yard, erected in the home works of the Betts Machine Company. Some idea can be gained from the men on the machine, of the size of the planer.

Betts Heavy Duty Planers are made in a complete range of sizes, 36″ × 36″ of any planing length up to any dimensions required.

When a job is difficult or of large magnitude they use a Betts. Betts Machines serve when others are found wanting.

Betts Machines lighten onerous labor for the skilled craftsman.

A Betts Machine Tool for every need in heavy duty work.—Let us have your problems.



Engine Lathes, Axle Lathes, Journal Trueing Lathes, Vertical Boring and Turning Mills, Tire Turning and Boring Mills, Horizontal Boring Machines, Planing Machines, Slotting Machines, Multiple Spindle Milling Machines and Munition Manufacturing Machines.

BETTS MACHINE COMPANY

405 WINTON ROAD, ROCHESTER NEW YORK, U. S. A.

Cable Address "Betts" Rochester

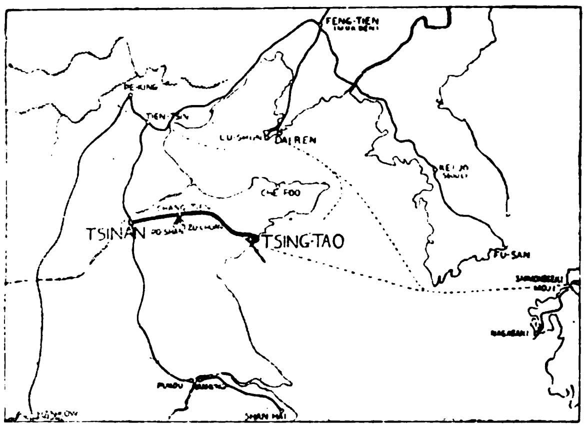
Established in 1861

ANDERSEN, MEYER & CO., LTD., Shanghai, China

Exclusive Representatives for China and Manchuria

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 9.30 p.m. arrives Tsingtao 9.10 a.m.

Local Trains run between Tsingtao and Kaohi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.43 & 10.21 p.m. daily.

BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.

THE GREAT HARBOUR, TSINGTAO

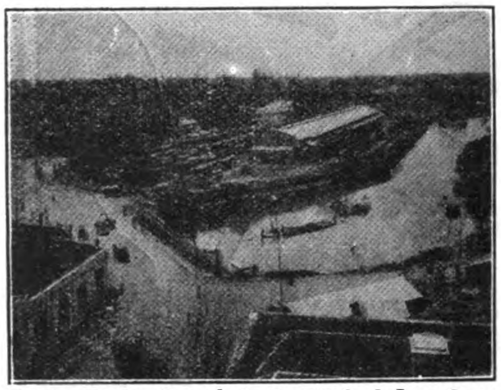
For Further Information, please apply to

THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

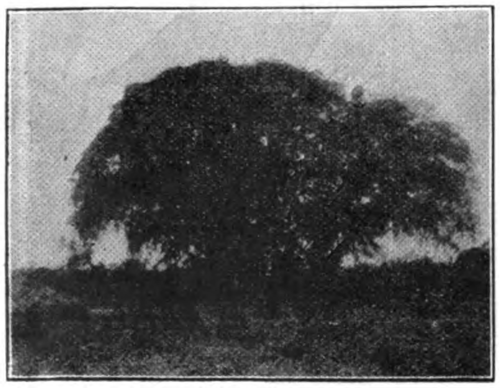
JAVA—THE WONDERLAND

HAVE YOU NOT YET VISITED JAVA?
IF NOT, DO SO NOW!



Bridge Bi Cis, Soerabaia Goods-shed, Java State Railways, Soerabaia City.

Girl Carrying Capoc.



Waringin.

Java, the peerless gem in that "magnificent Empire of Insulinde, which winds about the equator like a garland of emeralds," is the ideal tropical island, the greenest, the most beautiful and the most exquisitely cultivated spot in the East, the most picturesque and satisfactory bit of the tropics anywhere near the world's great routes of travel.

It fulfils the conception of what a paradise ought to be. It satisfies the imagination and more—for no Northern imagination ever conceived of skies so soft or indolent as these, of seas so serene and beautiful, of landscapes so exquisite or of nature so bountiful.

There is something here for every taste. The sportsman will find excellent big game shooting—the architect and the archeologist will delight in exploring the ruins of Buddhistic and Hinduistic temples. Those studying social and political problems resulting from colonial possessions can study here one of the most successful colonial systems existing. The geologist will grow enthusiastic over the many volcanoes active or quiescent, found here. At Buitenzorg, one hour's run from Batavia, the botanist has at his disposition the largest and best equipped Botanical gardens of the universe. The agriculturist will delight in the many cultures as f.i. rice, tea, coffee, rubber, etc., found here. Moreover, travelers are entirely safe in Java and even ladies alone can tour the island without inconvenience.

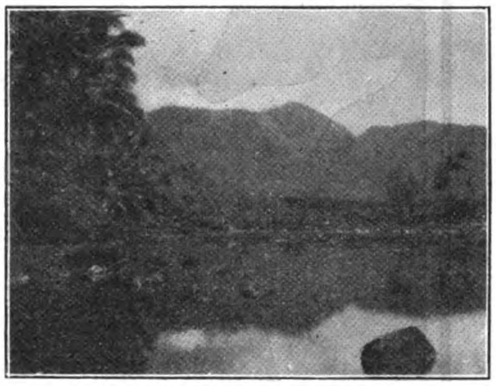
And to close this incomplete list of Java's advantages, it is singularly accommodating as regards climate. Thanks to the mountainous character of its physical conformation, and the different altitudes of its towns and hill stations, the visitor can select the climate best suited for his constitution. In a few hours he may change from the tropics to the temperate zone, may migrate from Batavia to Sindanglaja, 3,483 feet above the sea-level, or from Soerabaia to Tosari, at an altitude of 5,776 feet, and famous for its bracing air.

Few tourist playgrounds, in fact, are so favored, or possess a greater variety of attractive features.

THE JAVA GOVERNMENT RAILWAYS own 2,629 miles of thoroughly equipped lines, passing through all the principal Tourist centres.

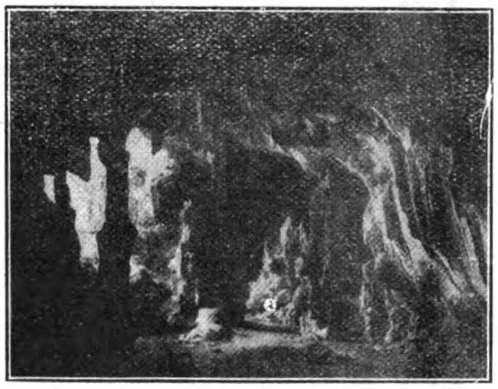
Comfortable travelling—frequent express and fast trains. Restaurant cars with efficient service in all express and fast trains.

For full information and literature apply to the "Official Tourist Bureau" at Weltevreden, Rijswijk 18.



Pond in the Neighborhood of Garoet.

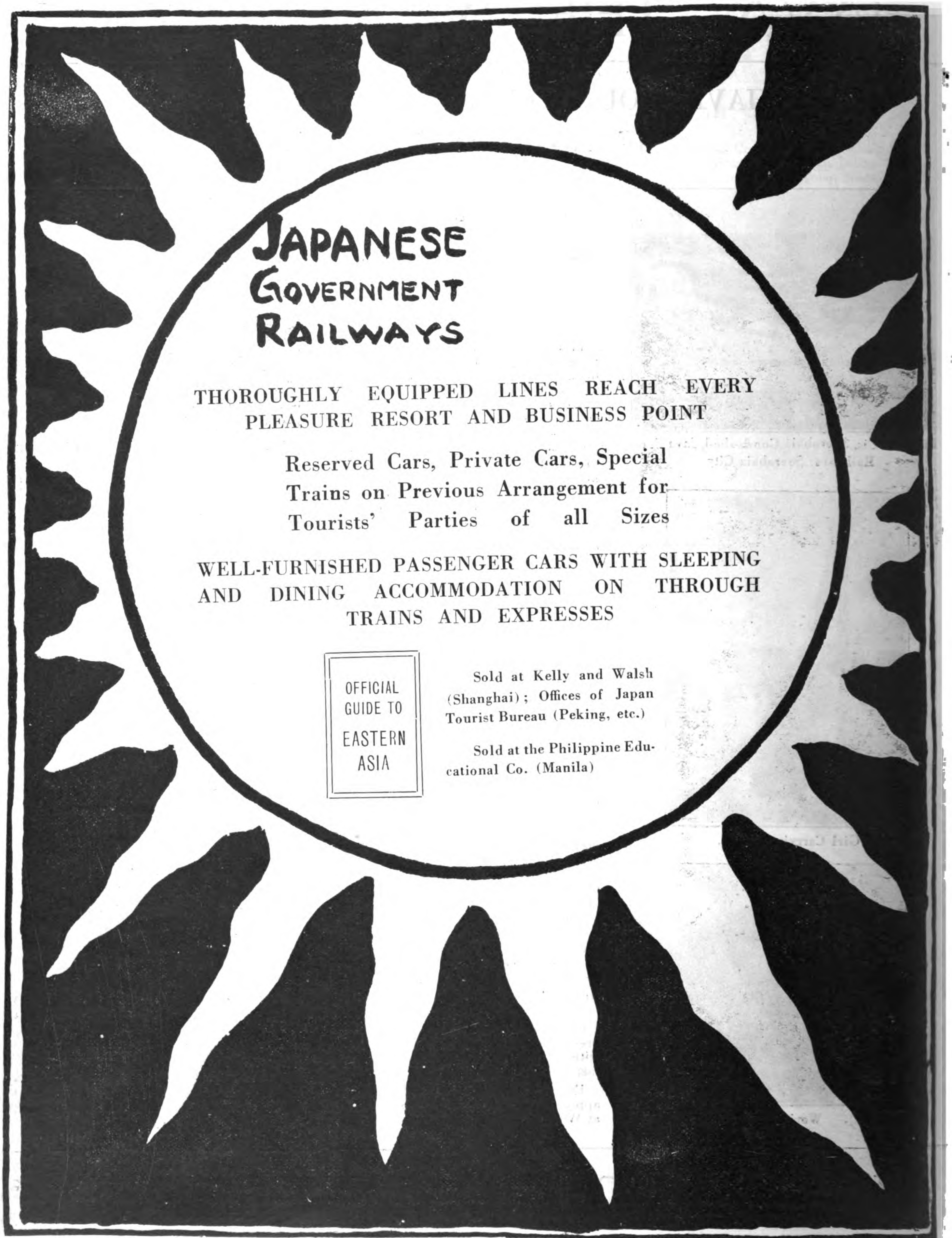
River Brantas, Malang.

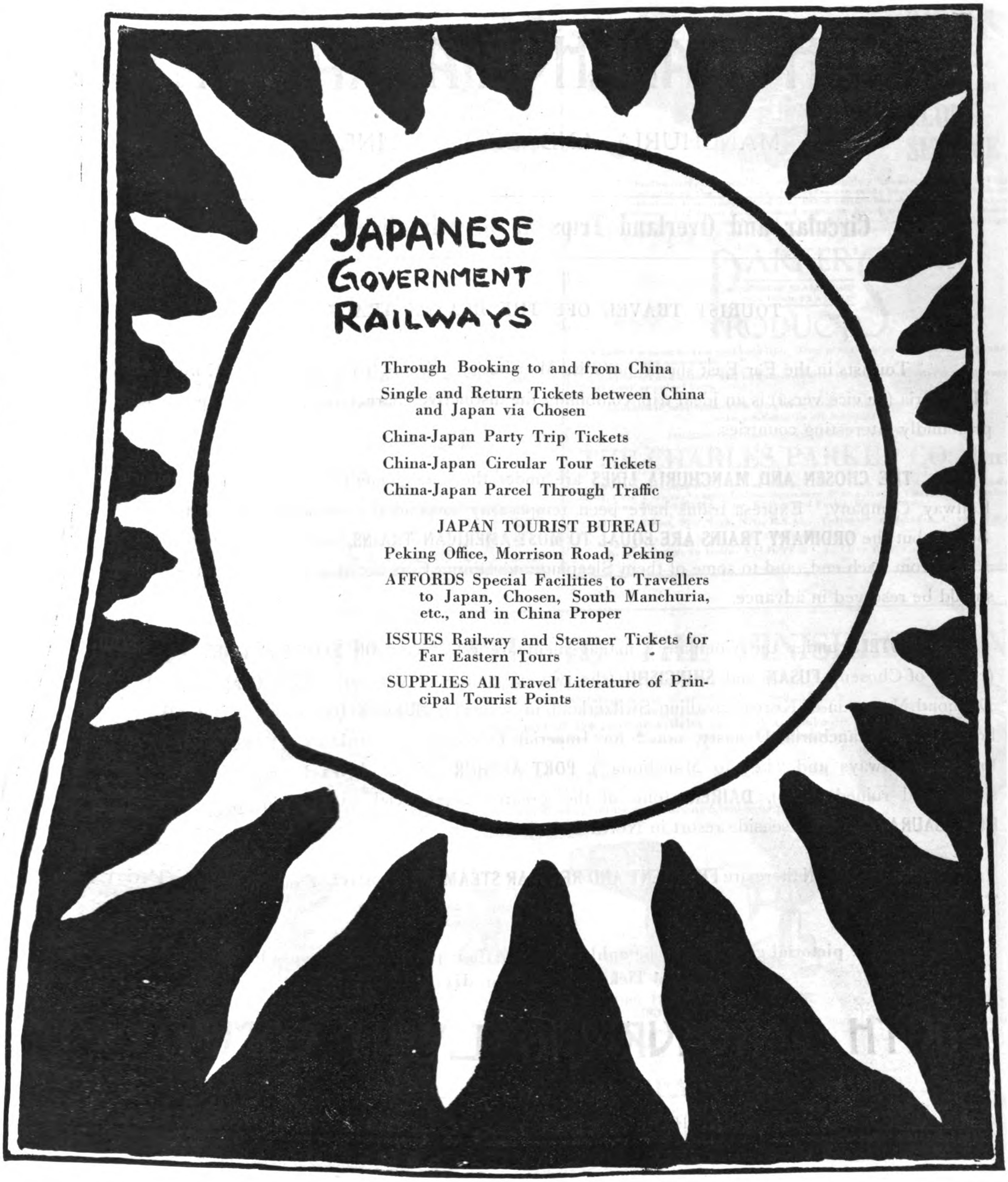


Caves, South Coast, Java.

THE JAVA GOVERNMENT RAILWAYS

The photographs in this advertisement are from "The Joint-Stock Co., Photographer's Studio, Kurkdjian, Soerabaia."


JAPANESE
GOVERNMENT
RAILWAYS
THOROUGHLY EQUIPPED LINES REACH EVERY PLEASURE RESORT AND BUSINESS POINT
Reserved Cars, Private Cars, Special Trains on Previous Arrangement for Tourists' Parties of all Sizes
WELL-FURNISHED PASSENGER CARS WITH SLEEPING AND DINING ACCOMMODATION ON THROUGH TRAINS AND EXPRESSES
OFFICIAL GUIDE TO EASTERN ASIA
Sold at Kelly and Walsh (Shanghai); Offices of Japan Tourist Bureau (Peking, etc.)
Sold at the Philippine Educational Co. (Manila)


JAPANESE GOVERNMENT RAILWAYS
Through Booking to and from China
Single and Return Tickets between China and Japan via Chosen
China-Japan Party Trip Tickets
China-Japan Circular Tour Tickets
China-Japan Parcel Through Traffic
JAPAN TOURIST BUREAU
Peking Office, Morrison Road, Peking
AFFORDS Special Facilities to Travellers to Japan, Chosen, South Manchuria, etc., and in China Proper
ISSUES Railway and Steamer Tickets for Far Eastern Tours
SUPPLIES All Travel Literature of Principal Tourist Points

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

SEATTLE — ORIENT

AMERICAN TRANS-PACIFIC SERVICE

PASSENGERS-FREIGHT

"THE SHORT ROUTE"

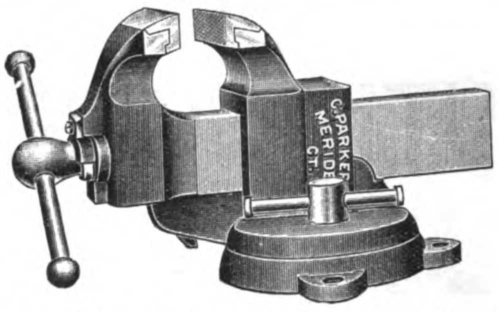
ANNOUNCING the inauguration of express passenger service from Oriental Ports of the s.s. WENATCHEE, s.s. KEYSTONE STATE, s.s. BAY STATE, s.s. SILVER STATE, and one additional steamer to be named later.

For rates and information apply To Agents

The ADMIRAL LINE

ANYWHERE ON THE PACIFIC

PACIFIC STEAMSHIP COMPANY



PARKER VICES are built for LONG SERVICE

Each holding part is especially strong and durable. Examine a PARKER VICE and note the grip of the jaws, these jaw faces are made in one solid shouldered piece of tool-steel, tempered, milled and fitted solidly but removable and renewable—fabricated and fitted to withstand constant hammering and hard knocks and when worn by long usage they can quickly be removed and replaced at slight cost, leaving the assembled vice as good as new. Parker Vices, like all

PARKER'S PRODUCTS "BUILT UP TO A STANDARD NOT DOWN TO A PRICE"

are built for hard service and long life. They give the biggest returns for money invested of any vice made.

Importers and dealers will find them constantly in demand—never dead stock. Stationary or swivel base.

Illustrated catalogue, with attractive trade terms, sent upon request. Correspondence in all languages.

ADDRESS EXPORT DEPARTMENT, DIVISION A.

THE CHARLES PARKER CO., Inc.

We are also manufacturers of Alarm Clocks, Bath Room Accessories, Coffee Mills, Cork Pullers, Lamps, Lemon Squeezers, Piano Stools, Chairs and Benches, Shot Guns, Tinned Steel Spoons, Knives and Forks, Wood Screws.

25 Murray Street, New York, N.Y., U.S.A. Factories in Meriden, Conn., U.S.A

ESTABLISHED 1832

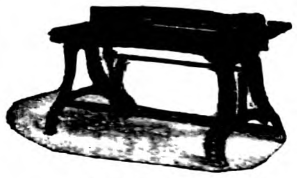
Representative in India: ELLIOTT & CO., Clive Row, Calcutta, India

FROM THE TIN PLATE TO THE FINISHED CAN

The complete equipment for manufacturing STANDARD ROUND SANITARY CANS (one, two or three pound) consists of several machines. We build these to suit the production requirements of the Can Maker. You must therefore send us **samples of the cans or articles you wish to make and state the daily output required; we will then recommend suitable machinery with cost.**

Note.—We do not make or sell tin plate or tin cans; we make and sell machines for making tin cans from tin plate.

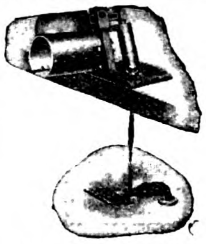
Some important machines which will produce up to about 5,000 cans per day:



SHEAR
This cuts the tin plate into strips.

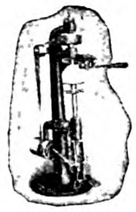
PRESS
This blanks out tops and bottoms.

ROLL FORMER
This rolls the bodies to cylindrical shape.



SOLDERING FRAME and CYLINDER
This solders the side seams.

FLANGER
This flanges both ends of can bodies.



DOUBLE SEAMER
This attaches bottoms and tops.

E. W. BLISS COMPANY

22 JOHN ST., BROOKLYN, N.Y., U.S.A.

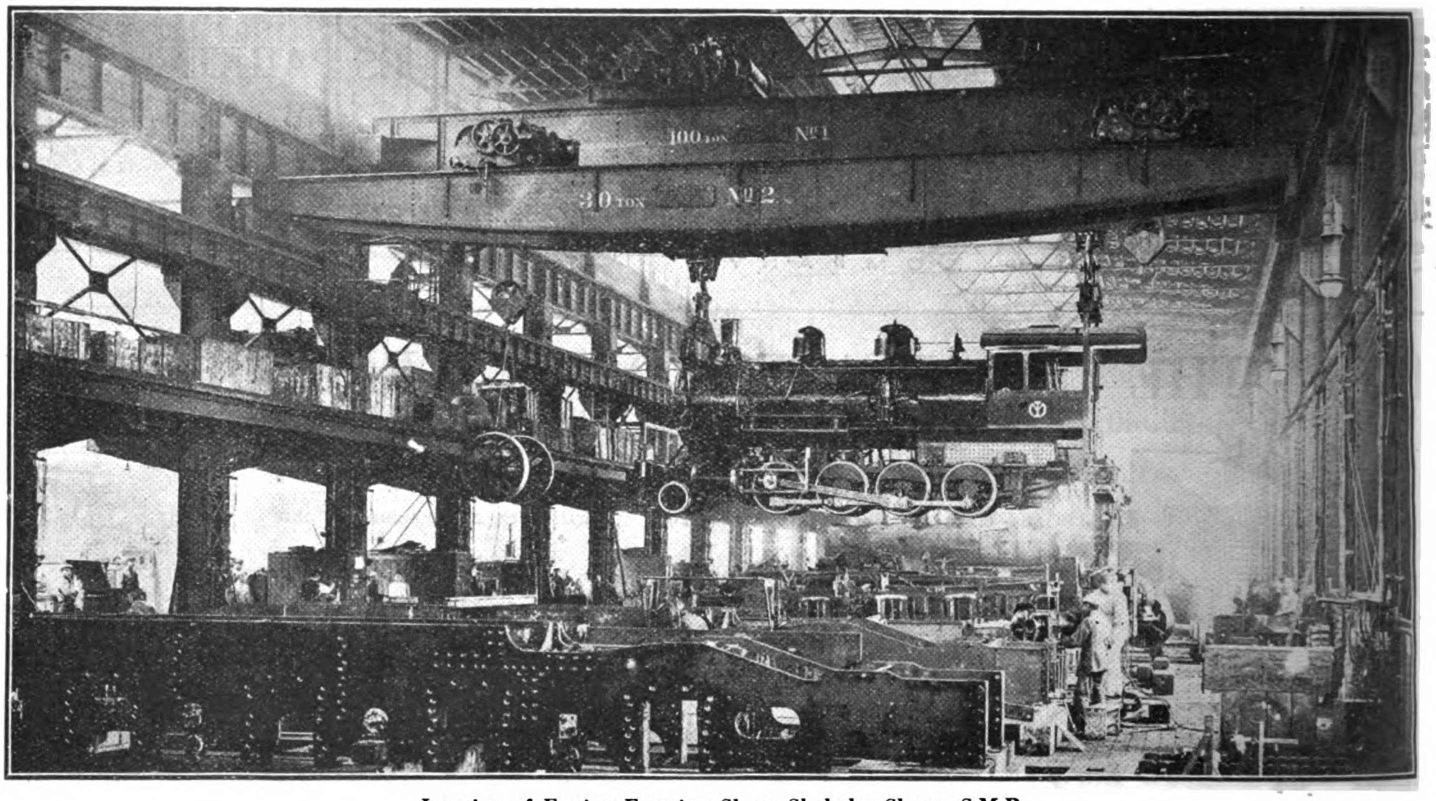
Presses, Dies and Machinery for the Sheet Metal Industry in general. Complete plants for the manufacture of Metal Boxes, Sanitary Cans of all shapes and sizes, Kitchen Utensils, Petroleum Cans, etc. Complete automatic equipment for making tin cans from tin plate in one continuous operation.

London, England—Pocock Street, Blackfriars Road PARIS, FRANCE—100 Boulevard Victor Hugo, Street Ouen

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

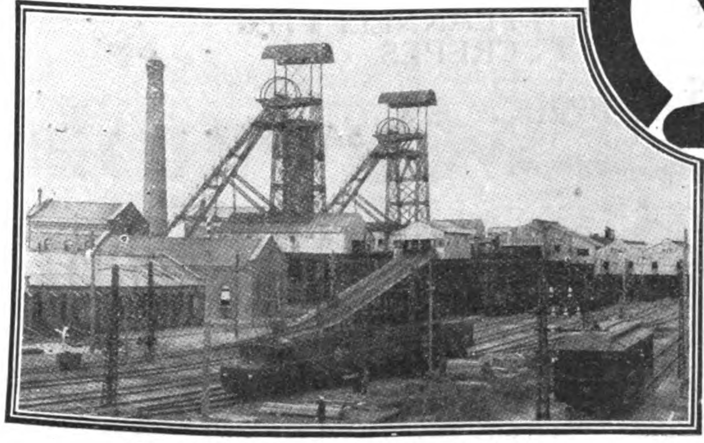
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

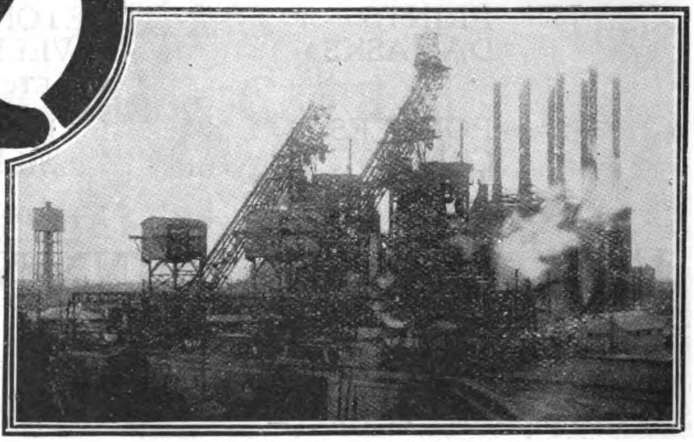
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



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The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

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Agencies:

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Singapore
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Takao (Formosa)
Batavia
Yokohama
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etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

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ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

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BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

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CREPES	SILKS	

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HIGASHI-SHRIIKE, KOBE, JAPAN

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FORMOSAN CANE

SUGAR

RAW, REFINED AND IN CUBES

FINEST **ALCOHOL** QUALITY

Formosa Sugar Manufacturing Co., Ltd.

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THE LARGEST SUGAR PRODUCERS IN ASIA

Operating the modern Mills with a grinding capacity of 7,800 tons of cane per day and two Alcohol Distilleries in Formosa, also Sugar Refinery in Kobe.

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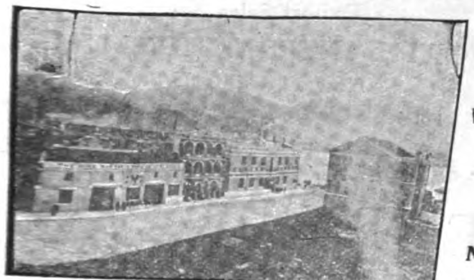

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DIXON'S BELT DRESSINGS

It's curious how many people give careful thought to buying good belts—and then let them get into bad condition for lack of a little care. As a matter of fact, nothing so well repays proper attention as a belt. A dry, stiff belt with a hard glassy surface slips and wastes a lot of the power it is supposed to transmit. And when it breaks, and needs to be replaced, there's a loss of output while the line shaft or machine is idle. Here are two products that ought to be in every power plant—they'll soon pay for themselves, many times over, in saving of power, time and belting.

Dixon's Solid Belt Dressing

This is a food, in paste form, for leather belts, applied when the belt is idle. It penetrates to every fibre, makes the belt soft and pliable, restores "Life," gives a surface that clings to the pulley without collecting dirt. It is a splendid protection against water and steam.

This comes in handy sticks, to rub on a running belt, and it's good for any kind of belt. It keeps the belt just right—soft and pliable and adhesive—supplying the needful elements which work out or dry out in service.

The consistent use of these dressings will keep every belt working up to the limit, minimizing belt renewals and keeping everything running right.

Send for Booklet No. 94

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Made in Jersey City, N.J., by the

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Established, 1827

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Five Reasons For Using "KEWANEE" UNIONS

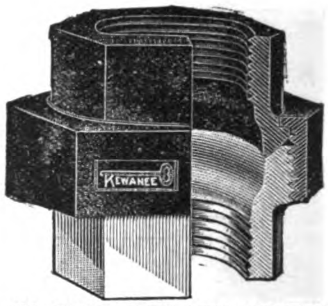

FIG. W2311 OCTAGON PATTERN "KEWANEE" UNION

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Brass to Iron Thread Connection

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No Gasket

3.

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No Defective Fittings

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Solid Three-Piece Construction

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No Strength Required

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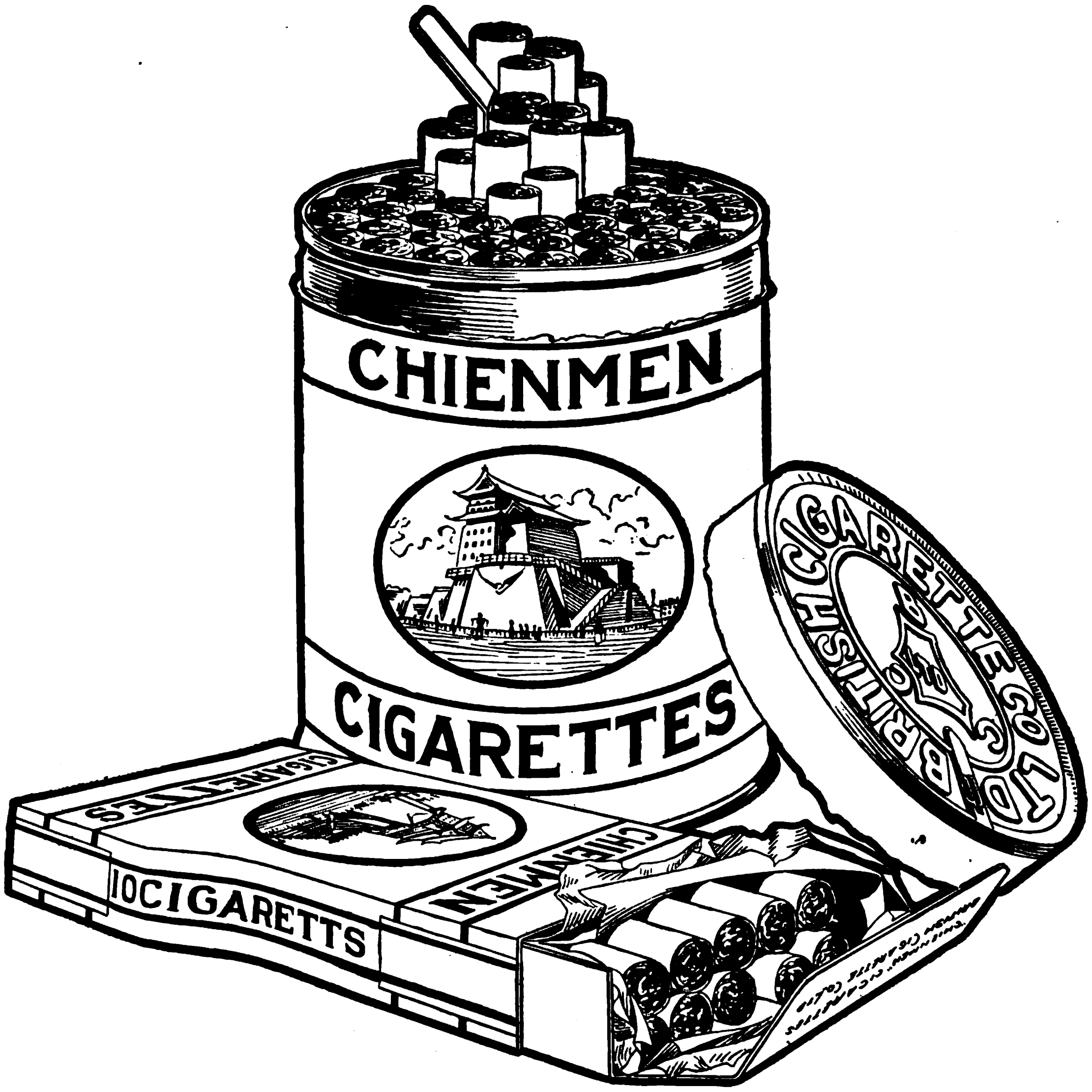
CHIENMEN

Cigarettes



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